

1834

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1 M Pope Leo X. d. 1521.  
2 Tu Battle of Austerlitz, 1805  
3 W in perigee.  
4 Th Wm. Drummond d. 1641  
5 Fr Macbeth slain, 1056.  
6 Sa Rev. Ed. Irving d. 1836.  
7 S Mary Q. of Scots b. 1542  
8 M Richard Baxter d. 1691  
9 Tu Milton b. 1608.  
10 W Ceres 8<sup>o</sup>  
11 Th 10 Grouse, Black Cock, and  
12 Fr Ptarmigan shoot. ends from the 17<sup>th</sup>  
13 Sa Samuel Johnson d. 1799  
14 S Washington d.  
15 M Isaak Walton d.  
16 Tu John Selden b.  
17 W 9<sup>th</sup> Sir H. Dan  
18 Th 17 Sir George  
19 Fr Sun enters  
20 Sa 21 St Thom  
21 S 40m. A.  
22 M 21 Short  
23 W 25  
24 Th 25  
25 Fr St STEPHEN THE DENTIST  
26 St JOHN THE DENTIST  
27 Sa THE HOLY INNOCENTS  
28 S 27 Lord Kames d.  
29 M William Sotheby d.  
30 Tu 29

Continue to plough stubbles.  
A great deal of straw will be requisite;  
and regulate thrashing, so there may be  
enough to last throughout the season.

In mild weather dress ditches and repair  
fences.

During frosty weather bring materials  
for drains and composts, and remove all  
heavy commodities

Cattle of every description should now  
receive winter care. Separate the weak  
from the strong. Give them a supply of water to store cattle,  
litter and food until  
the season.

At all times as much  
turnip, as possible.

By every  
digging,  
or future  
with food  
compost.

Planting, leaves,  
on a warm border,  
covered by the frost,  
in hotbeds.

Little can be done f  
this is the best



The

# DENTAL DIGEST

November, 1934

Vol. 40 No. 11

1934

DECEMBER

NEW YORK DENTAL CENTENNIAL

HOTEL PENNSYLVANIA NEW YORK

1934

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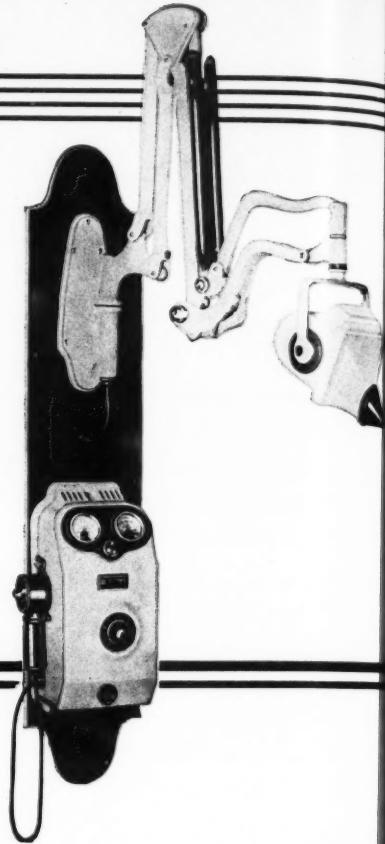
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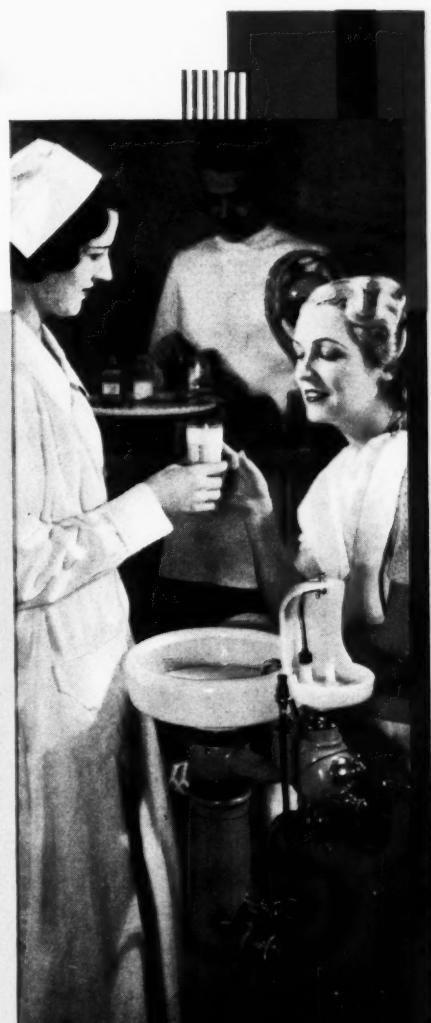
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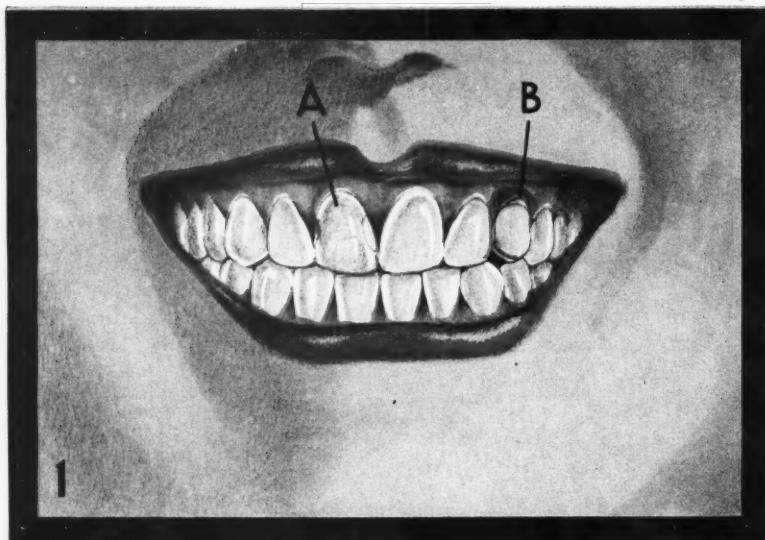
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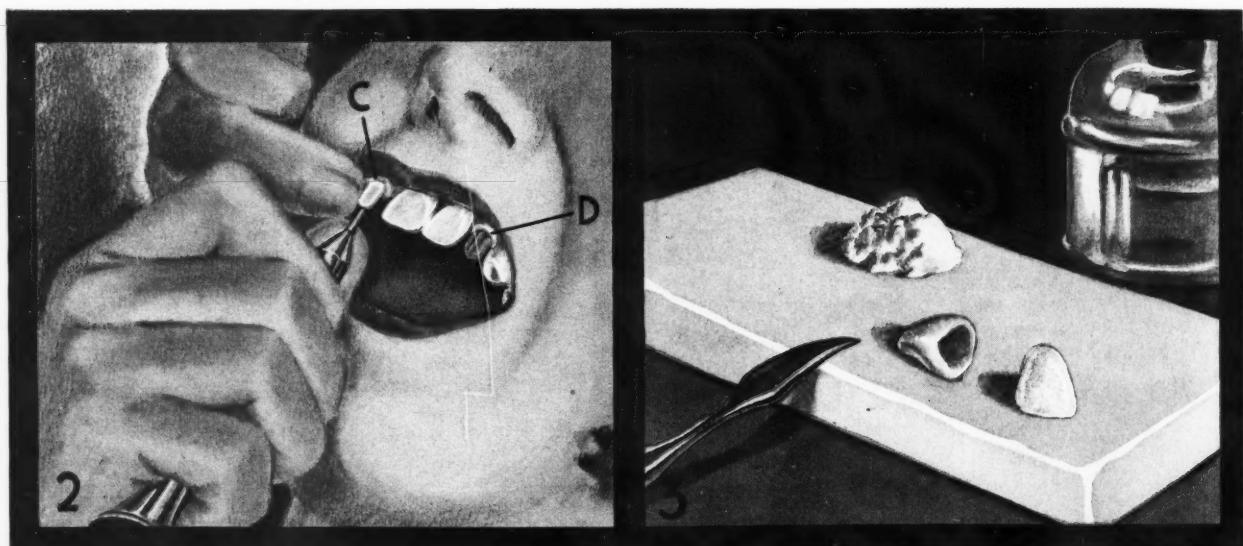
Have your patients form the healthful habit of purging the mouth night and morning with the concentrated mouthwash, Astring-o-sol.

# THE EDUCATION OF THE DENTAL PATIENT

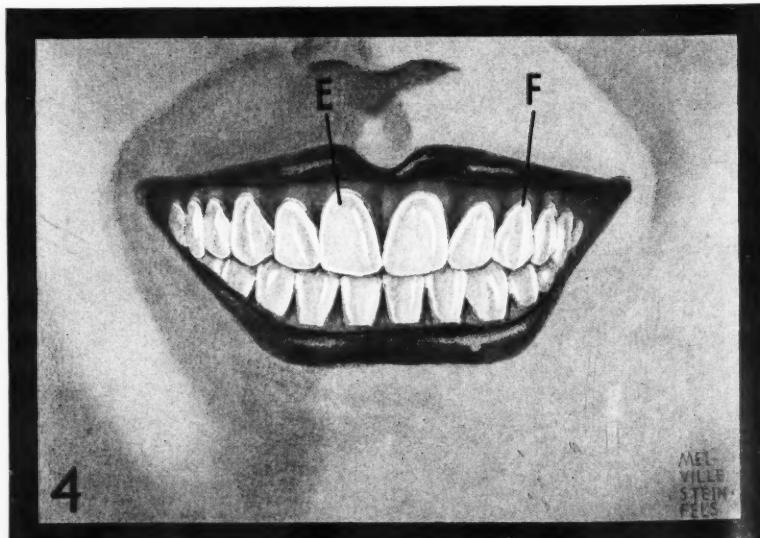
## III. MODERN PORCELAIN RESTORATIONS\*



1. A—A discolored tooth.  
B—An old-type crown with gold at edge and inflammation of gum tissue.
2. C—The tooth shown in 1 A prepared by a dentist for a porcelain jacket crown.  
D—The old-type crown shown in 1 B removed and a gold core prepared to receive a porcelain jacket crown.



3. The porcelain jacket crowns baked and ready for cementation over the prepared teeth, 2 C and 2 D.
4. E—The discolored tooth (1A) restored by a porcelain jacket crown.  
F—A porcelain jacket crown replacing the old-type crown (1B). Gold does not show and there is no inflammation of the gum tissue.



\*This is number three in the second series of charts intended for the use of the dentist in explaining important normal and pathologic dental conditions to his patients. The first series of charts is now available in booklet form.

# The DENTAL DIGEST



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EDWARD J. RYAN, B. S., D. D. S., Editor

ETHEL H. DAVIS, A. B., Assistant Editor

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## COMMON CYSTS OF THE JAWS

LEON HARRIS, M.D., D.D.S.

New York

**T**HE human jaws are frequent sites of cystic formations. These so-called cysts of the jaws which in their simplest concepts are sacs filled with fluid have their origin in two distinct sources: They arise either from the roots of teeth that have been chronically diseased, in which case they are spoken of as radicular cysts, or else take their origin around a tooth follicle of an unerupted tooth, in which case they are known as follicular cysts. In either case, sacs or cyst membranes form around these teeth, which in time fill up with a serous fluid, the constant accumulation and spread of which encroaching on the surrounding bone structures leads to its thinning out to such an extent that it ultimately becomes only a parchment-like membrane covering the cyst wall.

### CLINICAL MANIFESTATIONS

Large cysts may appear as globular masses underneath the cheeks or lips when visible or palpable; they are painless to the sense of touch unless secondarily inflamed. The direction that they take depends largely on their location. In the upper incisor region they may spread out either anteriorly under the upper lip, or upward toward the floor of the nose, or posteriorly under the palate where they appear as a spherical or egg-shaped circumscribed mass. In the upper bicuspid or molar region the direction of these cysts is both external or toward the floor of the maxillary sinus, the tendency being to push the floor of the sinus upward by invaginating it and gradually obliterating it, but never rupturing directly into the sinus unless secondarily infected. In the lower jaw the direction is usually external; in the lower anterior teeth, the swelling appears around the chin; in the other teeth the swellings spread outward.

Cysts are found more frequently in the upper than the lower jaws, the greatest incidence of occurrence being between 20 and 30 years of age. By far the greatest number of the cysts are of the radicular type, the ratio of radicular to follicular cysts being estimated by some authors to be as high as 50:1. So much for those cysts

that have reached a sufficient size to attract the attention of the patient or attending dentist. It is not at all unlikely that were it not for the universal use of the roentgen ray, the detection of these cysts in their early or formative stages would be entirely overlooked. As it is, a good many of them come to the attention of the patient only when they have reached a sufficient size to be perceptible and thus attract attention.

### METHOD OF FORMATION

Nothing definite is known about the formation of these cysts. The cystic fluid is alkaline, of aropy consistency, a yellowish color, and rich in cholesterol crystals. Undoubtedly this fluid is the result of a secretory function assumed by some of the epithelial cells that line the cyst wall. The particular stimulus that brings about the secretion of this fluid is not well established; the fluid is usually sterile and no bacteria are found either microscopically or by culture, unless the cysts become secondarily infected. Radicular cysts are the result of chronically infected teeth, and form around the inflamed and thickened periodontal membrane; the relationship between the two is consequently established. As to the epithelial cells which form the lining of the cyst wall, they are assumed to be epithelial rests or cells that have become lost or strayed away from the dental follicle and attached to the periodontal membrane and later on under a traumatic or chemical irritation begin to proliferate and secrete a serous fluid which fills up the cyst wall. The chronically inflamed and irritated periodontal membrane usually found with pulpless teeth and broken down roots, lends plausibility to this conception. Why they do not follow or become the result of all such teeth and roots, but are selective in their choice is not explicable in our present state of knowledge. As to the follicular cysts, as was said before, they appear in conjunction with unerupted and impacted teeth, and undoubtedly arise from the degeneration of the tooth follicle. Just what stimulus or irritation is the immediate cause of these cysts has not been defi-

nitely established. As the upper canines and lower third molars are the most frequently impacted teeth the follicular cysts usually form themselves in the regions where these teeth are formed.

### ROENTGENOGRAPHIC INTERPRETATIONS

It is safe to assume that before the era of dental roentgenography a good many of these cysts were either entirely overlooked, or at least not recognized until they showed clinical manifestations. With the advent of this means of dental and oral diagnosis, their early recognition has been considerably hastened, so that they are found to exist in all stages and various sizes. The progress that a cyst will make in its growth and spread undoubtedly depends somewhat on the density of the bone and the resistance it offers to the spread of the fluid between the plates of bone where it first appears. Thus the cysts are interpreted roentgenographically from the size of a pinhead to that of a pea or a pigeon's egg and even to the extent where they occupy the greater part of the maxilla or mandible. They tend through pressure to cause resorption of one of the plates of bone, usually the external one, its place being taken by the cyst wall and its contained fluid, thus offering less resistance to the passage of the rays and appearing on the roentgenogram as radiolucent shadows of varying size, definitely circumscribed by its limiting membrane and ending abruptly at the junction with the healthy, neighboring bony structure. If it is remembered that the injury caused by these cysts is brought about by the impingement and pressure of a fluid, which in its expansion as it is poured out by the secreting cells thins out the surrounding bone and does not in any way involve it in any pathologic destruction, the abrupt ending of the roentgenographically pathologic manifestation becomes apparent. Particularly is this true in large cysts of the mandible. Examination of the roentgenogram would lead one to believe that the entire side of the mandible has been destroyed and is about to fracture, the so-called patho-

logic fracture. Those, however, who have had a larger experience in observing and treating these cysts are well aware that the pressure of the cystic fluid is usually in only one direction, and while it may lead to the destruction of the external plate of bone, the internal plate remains intact and maintains the integrity of the bone.

Fig. 1 shows a large radicular cyst of a young girl, aged 12 years. The offending first molar, the crown of which has been completely destroyed, is still in place. To one familiar with the rapid decay that takes place in the teeth of some children, decay and development being almost concomitant, the assumption would be that a cyst of such magnitude in a child so young would be of several years' duration. The patient, however, did not complain of any disturbance and if it had not been for the enlargement of the side of her face would not even have been brought to the dentist for examination. From the appearance of the roentgenogram, it would seem that the mandible is about to give way at the lower border; yet this was far from the case. With proper enucleation of the cyst the integrity of the mandible was preserved and restored to practically normal. The radiolucent area will sometimes persist for a considerable time depending on the ability of the tissues to lay down calcium deposits in it. From the rapid decay of the patient's teeth, this ability to lay down calcium deposits did not look promising.

Fig. 2 shows a cyst formed around a socket from which a tooth has been extracted, without curettage of the granulomatous tissue. In this case it is hard to tell whether the cyst formed with the tooth in situ, or after the tooth was extracted and the underlying condition overlooked. At any rate many cases are seen in which teeth are extracted and underlying pathologic conditions are overlooked, or when diagnosed no steps for their eradication are taken. This is undoubtedly due to the erroneous teachings that have been allowed to gain ground that "these conditions take care of themselves."

Fig. 3 shows a similar case in which a removable bridge was constructed on top of the cystic condition as shown.

Figs. 4 and 5 show extreme destruction of the mandible. Fig. 4 represents an edentulous lower jaw; the patient had been wearing a denture for a long time, and the cyst, because of the irritation of the denture, became infected and accidentally led to further examination and diagnosis. In this connection it might be well to call attention to the fact that I have



Fig. 1

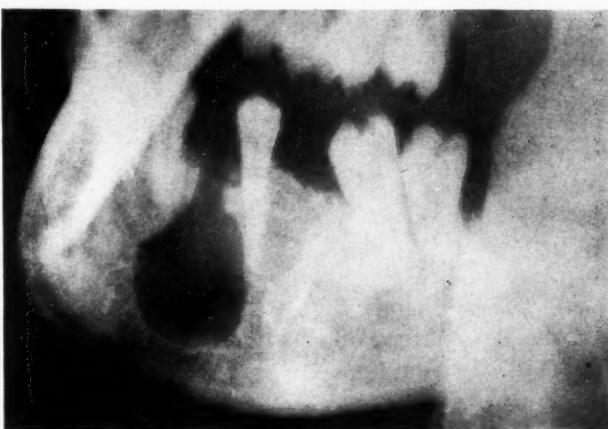


Fig. 2

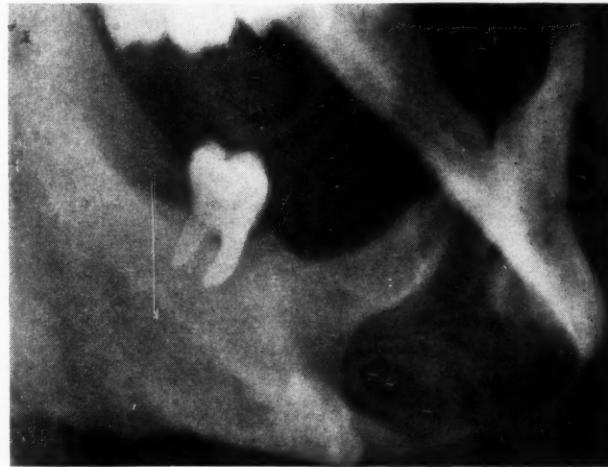


Fig. 3

seen numerous cases in which dentures had been constructed over jaws with cysts and impacted teeth, and these conditions were brought to light only after the irritation of the den-

tures with subsequent disturbances disclosed the underlying pathologic conditions.

Significant in the examination of these roentgenograms of radicular

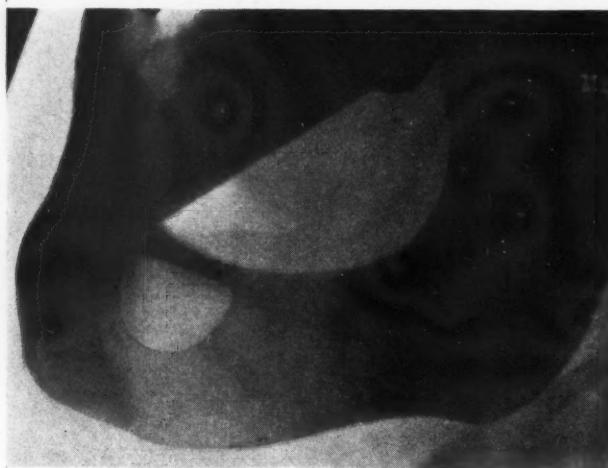


Fig. 4



Fig. 5



Fig. 6



Fig. 8



Fig. 7

cysts is the sharp delineation between the cystic condition and the neighboring healthy bone.

Fig. 6 is a roentgenogram of a radicular cyst involving the entire anterior portion (chin) of the mandible in a young person. All these roentgenograms except Fig. 4 are the same in the print as in the negative, hence dark.

#### FOLLICULAR CYSTS

Fig. 7 shows a large cyst of the upper jaw caused by the impaction of an upper cuspid. There was considerable destruction of bone tissue extending to the upper lip upward and forward and well toward the nasal fossa.

Fig. 8 shows a follicular cyst of the lower jaw in the earlier stages of formation which was also brought about by an impacted cuspid.

The fact that cysts are often seen in children is well illustrated in Fig. 9 which shows the lower second deciduous molar in position; the developing second bicuspid is seen underneath it without any root formation, and a large cystic destruction. The first permanent molar has almost fully erupted and the bud of the second

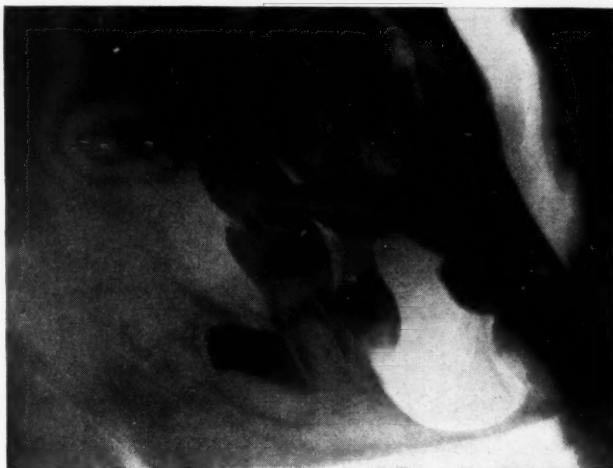


Fig. 9



Fig. 10



Fig. 11

molar is about to form. There is no question that some might consider it a follicular cyst from the follicle of the second bicuspid, but I am inclined to view it as a radicular cyst from the deciduous second molar.

In figures 10 and 11 are seen large follicular cysts occurring in the ramus of the lower jaw of young patients. Fig. 10 shows the first lower molar in normal position; the second molar impacted, its roots almost reaching the lower border of the mandible; the third molar is missing. Because of a persistent discharge from its socket, a roentgenogram was taken of the area and a large cyst of the ramus of the mandible was found.

Fig. 11 is that of a youth, aged 18 years, with a large globular mass in the left lower jaw in the region of the ramus. As the roentgenogram shows the first molar has been extracted and around the second molar a cyst involving the ramus close up toward the sigmoid notch was observable. The third molar was absent.

In all these cases the involvement was into the ramus of the mandible. While judging from the roentgenograms the destruction seems to be extreme but the operative procedure was simplicity itself. The sacs in all these cases peeled out readily; the external layer of bone was reduced to parchment consistency, was clipped away with scissors, and the large cavity that remained allowed to heal by clot formation and fibrosis.

#### SURGICAL TREATMENT OF CYSTS

Various methods for eradicating cysts have been advocated by different authors.

1. Some believe in simply incising the cyst wall, evacuating the fluid and by packing the cavity bring about granulation and healing from the cyst wall itself. Obviously this method does not offer definite results, for there is a tendency for the reformation of the liquid and filling up of the cyst wall.

2. The second method consists in laying back a flap of soft tissue, exposing the external wall of the cyst wall, after removal of the overlying bony or parchment-like structure, and then removing the outer cyst wall. The flap of tissue is then entirely removed, bringing the cavity of the cyst into communication with the buccal cavity as a sort of accessory cavity. By packing it until granulations appear, the cavity is finally totally obliterated with only a depression in the buccal cavity remaining.

3. The third method, which is the one of my own choice, consists in laying back a tissue flap, removing the external or buccal wall, peeling out the entire cyst wall, and then packing gently so as not to absorb the entire

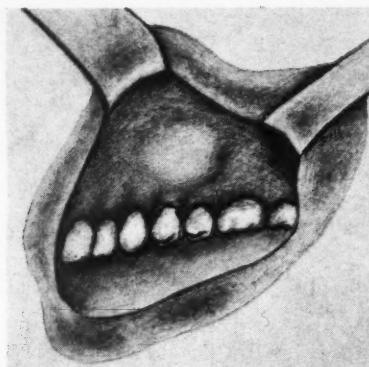


Fig. 12

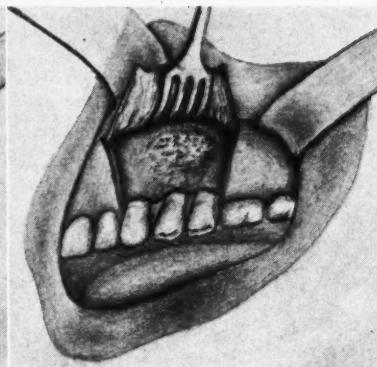


Fig. 13

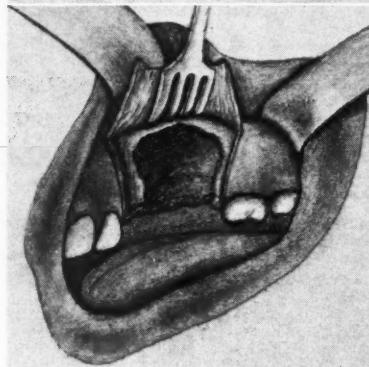


Fig. 14

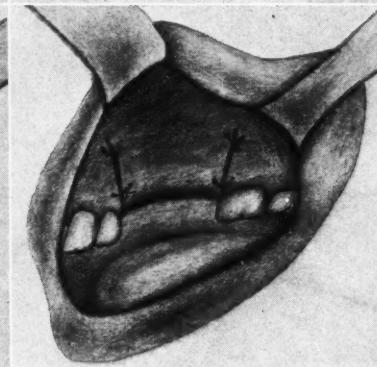


Fig. 15

blood clot, but rather to prevent the ingress of food and saliva. This tends to promote the formation of a blood clot, its ultimate fibrosis and calcification. I have practiced this method for more than twenty years with uniformly good results.

147 Fourth Avenue.

Fig. 12 is a schematic presentation of the clinical appearance of a cyst of the upper jaw, large enough to show a bulging on retraction of the lip and cheek.

Fig. 13 represents the same condition as shown in Fig. 12, with a

muco-periosteal flap laid back and held out of the way with a hook retractor. Note the bulging of the bone.

Fig. 14 shows outer wall removed and cystic sac enucleated in toto.

Fig. 15 shows flap coapted and sutured in position.

#### NEW INDEX TO DENTAL LITERATURE

The INDEX TO DENTAL PERIODICAL LITERATURE for the years 1906-1910, published by the Dental Index Bureau under the auspices of the American Institute of Dental Teachers, is now ready for distribution. This is the twelfth volume to appear and completes the series from 1839 to 1930. The eleventh volume, published last year, covered the years 1927-1929.

The price of each volume is \$6.00 to all points within the United States and Canada, and to all other points the price is \$6.50.

Communications concerning this valuable index to the dental literature should be addressed to Doctor Abram Hoffman, 311 East Chicago Avenue, Chicago, Illinois.

## WHAT THE DENTIST SHOULD KNOW ABOUT THE LAW

JOHN H. NESSON, D.M.D.

Boston

### (Conclusion)

#### NEGLIGENCE

Negligence may consist of acts of omission as well as acts of commission; that is, a dentist may be held liable for failing to do something he should have done as well as for doing something he should not have done.

Because a dentist's treatment of a patient is unsuccessful, it is no proof that he was negligent in his treatment. Court records of malpractice cases against dentists show that most of these cases arise as a result of extraction of teeth. Either infection resulted, a needle was broken off, a jaw fractured, or roots were left; or else the patient may have suffered grossly exaggerated or actual pain or swelling. It is because of the large incidence of malpractice cases resulting from extractions that we will discuss some of the legal phases connected with them.

We know, that considering the millions of teeth that are extracted by dentists as a profession, a small percentage of these patients suffer any undue postoperative results. It is because of this fact that most laymen have come to look on a tooth extraction as a trifling matter and to expect every tooth to be extracted easily and without any untoward after-effects. If the dentist experiences difficulty in removing the root fragments or there is any undue postoperative pain or inflammation, we know how susceptible the patient is to a hint or a suggestion from some friend or relative that the dentist be sued.

We, as a profession, are partly to blame for this. When a timid patient presents herself for the extraction of a badly broken-down abscessed molar, we are altogether too ready positively to assure her that the extraction will be an easy one and promise her absolutely no pain and perfect postoperative results. As a general practitioner who has done considerable extraction for his own patients as well as for referred patients, I have often been told that woeful tale by the patient. I feel reasonably certain that the oral surgeon or exodontist of considerable skill and experience would be reluctant to make such rash prom-

ises with the simplest case at hand. Some of these "easy" cases later present us with a malpractice suit. Why any dentist should lead his patients to believe that exodontia is as simple as ABC, I fail to comprehend, judging by some of these "easy" cases I have encountered in my several years' experience. If we will make our patients understand that these "easy" extractions are surgical operations in the fullest measure of the term, and inform them of the possible complications as we experience them in handling thousands of cases, our patients will evaluate the operation at its true worth, and fewer suits for damages will result.

While this paper is not intended as a course in surgery or operative dentistry, a brief review of some of the untoward results associated with the extraction of teeth, which are often the basis of a malpractice suit, will stress the importance of this operation in the dental office: (1) Postoperative pain; (2) shock; (3) infection; (4) fatigue; (5) trauma; (6) foreign bodies in the bronchi or lungs, (a) broken root fragments and (b) broken instruments and needles; (7) hemorrhage; (8) roots in the antrum; (9) fractured jaws; (10) trench mouth (Vincent's infection); (11) osteomyelitis; (12) extraction of wrong tooth; (13) unauthorized extraction in children.

Undoubtedly, there are many other conditions that are the result of extraction of teeth which I have not enumerated, but which are sometimes the basis of a malpractice suit. A large percentage of malpractice suits are based on infection following the removal of one or more teeth. In many cases the patient claims that unsterilized instruments were used. If dentists were careful in the matter of preoperative procedure to have the instrument tray or bracket table *clean* and *clear* of any instruments, many subsequent law suits would be obviated at this point. In my practice I never have an instrument or cotton holder or anything else on the tray before the patient is seated. Everything is placed on the tray after the

patient is seated; then there can be no question in the patient's mind as to whether or not the instruments had been used on the previous patient.

In these cases in which the patient bases his claim on the failure of the dentist to use sterile instruments, the patient must *prove* that the infection resulted from that cause and not from any of the other factors which were present in the mouth and may have caused the infection.

In a Massachusetts case a patient sued a dentist claiming postoperative infection as a result of negligent use of unsterilized instruments. The dentist testified that the tooth was abscessed at the time of extraction, and as to the more severe infection previously present, and the ideal incubation the mouth would afford for such an infection. The patient also failed to return for postoperative treatment as advised. After the plaintiff was awarded a verdict of \$2500, the defendant appealed. The Supreme Court reversed the decision and said this:

"Where one claims that infection followed the extraction of a tooth due to the use of unsterile instruments, and where testimony is offered that the infection may have come about from one of several causes, including the use of unsterile instruments, the burden of proof is upon the plaintiff to prove that the infection resulted from the latter cause and that cause alone. This the plaintiff has failed to prove. Judgment reversed."

In a California case in which a patient recovered an \$8000 judgment based on a claim that the dentist used unsterile procaine hydrochloride solution, the judgment was reversed by the Supreme Court with this opinion:

"A dentist, like a physician, is not an insurer of perfect results of a dental operation or freedom from injurious consequences thereof, but, on the contrary, is liable only for a lack of that reasonable degree of skill and learning possessed by dentists of good professional reputation or a failure to use such ordinary care in the performance of the operation and treatment as is commonly used by reputable dentists in that vicinity."

In contrast to these cases are two Massachusetts cases that went to the Supreme Court where the judgments against the dentist were upheld. In both cases the defendants conducted advertising offices in Boston and in each case the plaintiff was a woman who contracted syphilis following the cleaning of the teeth at each office. Medical testimony showed they were free from this disease prior to having their teeth cleaned and that about six weeks later they developed chancre about the lips. Testimony was introduced

to show that the dentist in each case failed adequately to sterilize his instruments in accordance with the custom generally employed by other dentists.

Drawing a conclusion from these cases of infection, one would say that merely because the patient developed infection or pain or swelling following the extraction of teeth is no evidence in itself that the dentist was negligent or failed to use sterile instruments. The burden of proof is on the patient to prove such contention.

We now come to that group of suits based on leaving foreign bodies, such as roots, broken needles, and broken instruments following extraction. Again we must emphasize that the mere fact that a tooth, needle, or instrument is broken during an extraction is no proof, in and of itself, that the dentist was negligent. The most expert dental surgeon sometimes breaks roots during extraction. The only one who never breaks a root during extraction is the dentist who doesn't extract teeth. Broken needles and instruments are often the result of a hidden imperfection in the instrument itself which could not have been discovered by ordinary means. In the law these are termed latent defects. Ordinarily, the manufacturer is not liable for injuries as a result of a latent defect in machinery he makes if he observed the usual precautions in testing and checking the machinery as ordinarily employed in that particular trade. But, if he knew of the latent defect and sold it as perfect, or by some means covered up the defect, and injury resulted later, he would be liable.

However, not all broken needles and instruments left in patients' jaws are due to latent defects in the instruments. Such breaks will occur in cases in which the operator exercised due care and reasonable average skill and the instrument broke despite such due care. Then there are those cases in which the needle broke during a mandibular injection, because the patient suddenly jumped or moved. Finally, there are those cases in which the accident resulted from negligence on the part of the operator in sharply striking the inner border of the ascending ramus of the mandible, resulting in a broken needle; or in exerting too much force, resulting in a broken elevator tip or some other instrument.

As dentists, we know that when a root or several roots are broken during extraction, particularly under a general anesthetic, such as nitrous oxide, it is not always possible nor feasible to persist in the operation until the roots are removed. In many cases the patient comes to the office with an infected area, swelling, pain,

possible trismus, and other complications. If, in attempting to remove the offending tooth or teeth under nitrous oxide oxygen anesthesia, one or more roots fracture, it is often considered good practice to postpone the removal of the retained root fragments to a subsequent sitting. This will permit drainage to be established, the swelling to be reduced, pain to diminish, possible hemorrhage to be controlled, and allow the patient to regain some of the vitality lost during the period he suffered the toothache before he was driven by pain to the dentist.

However, under any circumstances, when the roots cannot be removed at the time of the extraction, or when it would be better for the operator and patient to postpone the removal of the roots, possibly under a local anesthetic at a subsequent sitting, it is the dentist's duty to tell the patient that the roots are there and that another appointment will be necessary. Or else, if for some reason the dentist feels that he wishes to send the patient to an exodontist or oral surgeon for the removal of the fragments, it is his duty to advise the patient and take such reasonable measures to see to it that proper care is given the patient. The law would say that he should exercise such due care and diligence as the average reasonable man practicing dentistry would exercise under the same circumstances. In the law there is a mythical individual repeatedly referred to, known as the average reasonable man. No one has ever seen him, and his identity is a mystery, but the law takes him as a standard.

To permit a patient to leave the office with retained roots, a broken needle or a broken instrument in the jaw, without telling the patient or recommending proper treatment for the condition, and hoping that somehow the foreign substance will work itself out or result in no injury to the patient might expose a dentist to a suit for malpractice.

In a recent Massachusetts decision in which an advertising dentist left a broken needle in a patient's jaw and negligently failed to remove it or have it removed, the patient developed osteomyelitis, and recovered a \$25,000 judgment.

Therefore, if you break a needle, or instrument, or tooth, and cannot remove the foreign substance, your safest measure is to refer the patient to a competent specialist who is better qualified by skill and experience to perform such difficult operations. And there is no reason why the patient should not pay the specialist's fee in the case if the dentist was not negligent in his work.

#### FOREIGN BODIES IN THE AIR PASSAGES

Considering the countless dental

operations performed, it is a remarkable tribute to the skill and dexterity of the dental profession to note the comparatively rare and few cases in which foreign substances are permitted to fall into the throat and air passages. No less an authority than Chevalier Jackson, M.D. of Philadelphia is responsible for this tribute to the dental profession. Occasionally we find a case in which a root canal reamer or broach or an inlay or removable bridge somehow or other gained entrance into the esophagus or bronchi or lungs. While these particular cases always look bad for the dentist, and he stands "convicted" even without a trial in the mind of the patient, here again the plaintiff must prove negligence. It is well recognized in the law that wherever the human element enters into a transaction, there is room for the unexpected accident which could not have been reasonably foreseen.

When the case is based on a root fragment or broken filling gaining entrance into the air passages during extraction under a general anesthetic, we are faced with a slightly different situation. In this instance such an occurrence could have reasonably been foreseen and precautions taken to prevent the accident. All else being equal, failure on the part of the operator carefully to pack the throat during such an operation would amount to almost *prima facie* evidence of negligence. It would be difficult for the most astute legal defense to offset such damaging evidence. Therefore, a most important measure is to pack the throat carefully before removing any teeth under a general anesthetic. Such practice is also to be encouraged in the use of a local anesthetic.

Should you be so unfortunate as to allow a root or a foreign substance to enter the air passages, the safest thing to do is to take the patient to a hospital and have roentgenograms of the air passages and lungs taken. The foreign substance may have gone into the esophagus and have entered the stomach. If there are no sharp prongs or clasps which may catch on the mucous lining of the intestines, it will be passed off with the feces. In any event, by taking the patient to the hospital, you will have done everything in your power to exercise reasonable care under the circumstances.

#### UNAUTHORIZED EXTRACTIONS

I have previously stated that in rendering services to children, it is best to obtain the parent's consent. Once in a while a malpractice suit is based on unauthorized extraction. Not infrequently this claim originates in the mind of a lawyer who either seeks to create a case or to find some

defense for not paying the bill. Nor is this claim limited to children. Often a patient brings suit for malpractice, basing his claim on the allegation that he went to the defendant to have one tooth extracted and the dentist extracted two or more.

As a professional man you have a right to advise your patient as to what is best for his interests, but you have no right to take matters into your own hands. Even if a patient may have a mouth full of infected loose teeth caused by pyorrhea, and the patient consents to have only one tooth out, you have no right to extract any more without the consent of the patient. In the case of a child, no extraction should be performed without the parent's consent. No general anesthetic should be administered without the written consent of the parent. Play safe at all times and protect yourself to prevent the grief and undesirable notoriety that malpractice suits bring.

The Maryland Court of Appeals summarized the most important points in a recent case in upholding a judgment against a dentist as follows:

If a patient leaves it to the dentist what work is to be done, he is answerable only for lack of proper skill and care. But when the patient indicates just what he desires to be done, the dentist renders himself liable if he goes beyond that.

Unless a dentist requests the patient to return for further treatment, the latter cannot ordinarily be held to be at fault in failing to do so. Or, if the patient fails to improve under negligent treatments, failure to return to the same dentist will not be regarded as unduly depriving the dentist of an opportunity to remedy matters.

#### REMOVAL OF IMPACTED THIRD MOLARS

Frequently the malpractice suit is based on infection or fracture of the mandible following the removal of an impacted mandibular third molar. Has a general practitioner of dentistry the right to attempt the removal of such difficult teeth? According to the law, any licensed dentist has a right to extract such impacted teeth with the approval and consent of the patient, or in the case of a minor, with the parent's permission. He must extract the tooth with the skill of the average general practitioner of dentistry in the district in which he practices. If the dentist is a specialist, he must extract it as well as the average specialist in his community.

#### EXCLUDING OBSERVERS FROM THE OPERATING ROOM

For the greatest efficiency as well as for his own protection, the dentist should exclude the parents or friends of the patient from the operating room during extraction. We can

readily appreciate how an ordinary extraction might seem like a bloody heartless bit of butchery to a lay observer, especially if he happens to be a relative. We all have had some parent with a false sense of parental love ask, "Doctor, how could you have the heart to extract that child's tooth?" Although you have brought blessed relief from an abscessed aching molar that seriously affected the child's health! Can you picture that parent or relative telling a jury about your bloody inhuman technique in removing that tooth? Such evidence has often spelled a large verdict for the plaintiff.

#### WRITTEN INSTRUCTIONS FOR POSTOPERATIVE CARE

Before you dismiss the patient who has had an extraction be sure to give the patient written instructions for postoperative care. And of all the important advice these written instructions contain, none is more important to you or the patient than instructions to return to the office immediately if for any reason, he is not getting along all right.

#### INJECTION INTO SWOLLEN AND INFECTED TISSUES

Numerous malpractice suits have been based on infection following the injection of procaine hydrochloride into a swollen infected area. Especially has this been true of mandibular third molars with pericoronal flaps. Dental literature is replete with reports of cellulitis, osteomyelitis, gangrene, trench mouth, and other serious infections following the injection of procaine hydrochloride into such swollen infected areas. The courts have spoken and declared it negligent on the part of a dentist to follow such procedure. It is not accepted among the best minds in the dental profession and is not in keeping with the accepted practice of the average general practitioner of dentistry.

#### RECORDS

So much has been written and said about the importance of keeping accurate and complete records of services rendered that it hardly seems necessary to amplify the advice. However, if we are to accept the statements of defense attorneys defending malpractice cases, most dentists do not have adequate records to present in court to substantiate their defense. Many a case has been settled or lost because the defending attorneys felt the inadequacy of the records would result in a substantial verdict for the plaintiff. Roentgenograms and written records of all the treatment rendered are essential. The law does not expect or demand that your choice of

treatment be infallible. If the case presented alternative methods of treatment, and you selected one of the accepted methods, even if it later appears that you did not make the best choice, there is no liability. If you can produce accurate records to substantiate your treatment, you have gone a long way toward a successful defense of your case.

#### INSURANCE

No man should enter the practice of dentistry without protecting himself with malpractice insurance. I cannot emphasize that too strongly. A dentist may practice successfully for many years without ever encountering a snag and suddenly find himself faced with a malpractice suit. Often, a successful reputable dentist will feel that he does not need to carry such insurance, but he may be ripe plucking for some lawyer. There was a time when a reputable attorney would not handle a malpractice suit against a physician or dentist, because most of these cases are nothing short of blackmail. Today, however, we find reputable firms of high standing taking such cases.

#### PROCEDURE

If you get into difficulties, communicate at once with the insurance representative. The usual procedure of starting a suit is to serve the defendant with a summons from the court ordering him to appear in court on a certain day to file answer to the suit. If you are served with such a legal document, communicate with your insurance representative and forget about it for at least a couple of years. Most malpractice suits are entered in the Superior Court to be tried before a jury, and in these days the courts are so cluttered with automobile cases and other tort cases that in a large city, it sometimes takes three or four years before a case is reached. By that time, either the plaintiff will have been discouraged or some settlement may be reached out of court so that you will never have to appear in court to defend the action.

In any event, place the records of the case and all evidence in your possession in your attorney's hands and do not discuss the case with anyone representing the plaintiff.

#### EXPERT TESTIMONY

In almost every malpractice suit, the plaintiff tries to bring in a dentist or physician to testify as an expert against the defendant. If you are ever called on to testify, you have a right to refuse to appear in court, unless you are summoned. Once you are

(Continued on page 390)

## ROOFLESS DENTURES

W. S. BENEDICT, D.D.S.

Washington, D. C.

THE question of roofless or palateless dentures is not necessarily a new subject although much discussion has occurred lately on different types of roofless dentures. One of the earliest operators to advocate a roofless or palateless denture was Doctor Jacob Wesley Greene, one of the Greene brothers of "The Greene Technique" fame at the time he was teaching and advocating the compound impression technique back in 1888 and 1896. He wore and demonstrated a roofless denture at that time.

In submitting the following technique on the construction of a roofless denture, it is not intended that this type shall supersede the old type denture with a full palate which usually impinges on the soft palate and eventually rides on the bony structure of the hard palate, but rather that it be used in those cases in which the old type denture is less successful and satisfactory both from the point of view of the wearer and the maker. In cases in which there is a large torus palatinus that gives a great deal of discomfort in the old type denture and in mouths in which the tissues over the vault are especially thin and unyielding, this type of denture will give greater satisfaction and comfort. It will prove successful in most mouths whether the palatal tissues are normal or not. It is particularly recommended in those cases in which the patients have sensitive throats and palates with a severe palatal reflex.

Patients state that they have a better sense of taste with the roofless than with the old type denture. It is a known fact that there are no taste buds in the roof of the mouth, but that they are found in the posterior surface of the tongue. The most satisfactory explanation given for this phenomenon is that the tongue or bolus of food, touching the hard palate, creates a reflex which stimulates the taste papillae more actively than when they touch a foreign substance. At any rate, whether psychologic or not, patients agree that their sense of taste is improved.

To quote Doctor Greene:

Few people having worn a roofless

plate would be content with any other. A roof does interfere with taste to some extent and if in no other way, than by obtunding the sensitive nerves of the tongue by frictional contact the same as work with a hoe handle will harden the fingers so a blind person cannot read raised letters.

Another assertion made by patients is that they do not feel as if the border of the soft palate is being held in a vice and that there is more comfort in swallowing and singing.

### EXAMINATION OF MOUTH

As when any type of denture is constructed, a thorough, concise examination of tissue conditions, muscle attachments, form of arch, tissue resilience, and bone condition are necessary; also the recording of these conditions on a suitable chart for reference in preparing the model for retention.

### ROENTGENOLOGIC STUDY

A roentgenographic examination is essential in all edentulous cases to determine whether any unerupted teeth are remaining, to determine the presence of unextracted roots and residual areas, and to determine repair of bone after extraction. The roentgenogram will disclose an important feature to all denture makers and this is whether the bone trabeculae show a condition of hypercalcemia or hypocalcemia. In cases showing a dense normal trabecular infiltration of mineral salts, the operator can be reasonably sure that a denture properly constructed on such a foundation will give service for some time without the necessity of rebasing, provided too much compression of tissues has not taken place in obtaining an impression.

It is those cases of hypocalcemia showing a thin trabecular outline roentgenographically with a deficiency of mineral deposits that are the bane of all prosthodontists. The bone is easily resorbed, making for change of shape and form from month to month with endless rebasing operations and general dissatisfaction.

A great deal of grief may be eliminated in such cases by placing the patient on medication of cod liver oil and

dicalcium phosphate for several months to rebuild the mineral salts deposits throughout the trabeculae and prevent pronounced resorption and change of bone. Anything that will rebuild tooth structure and prevent decay will also build and solidify the bony structures of the maxilla and mandible. This is a subject of immense importance to prosthodontists and bears further consideration.

Knife-edged ridges as well as eburnations or hard spindle-shaped nodules will show up roentgenographically. It is necessary to remove the nodules surgically to prevent irritation. It is also necessary to remove sharp knife-edged ridges. A surgical operation rounding off these ridges before attempting to build the denture will save endless effort in adjustments and remaking.

### ARCH SIZE

Arches are classified as large, medium, or small. The large arch offers the better means of retention as more surface is covered by the denture except in those cases offering a flat vault. The medium size that is well arched but does not have an extreme vault perhaps offers better retention features than do the other two.

### ARCH FORM

The form of the arch may be classified into ovoid, tapering, and square. The selection, arrangement, and form of teeth usually follow the form of arch presented. I have found the Wavrin Tooth Guide a help in selection of teeth with respect to size, shape, mold, and form. This combined with the mask (Fig. 1) should give a fairly exact duplication and set-up with a natural appearing arrangement for that particular patient.

### RIDGE FORM

Undercuts in the posterior portions should be eliminated surgically, care being observed to reduce the tuberosity only to the amount that will eliminate the undercut. Knife-edged ridges should be eliminated as previously mentioned.



Fig. 1.—In order to reproduce the abnormalities or peculiar arrangement of teeth found in the average patient, a mask has been found a great aid in setting up artificial teeth so as to give them a natural appearance. If the operator is fortunate in having the patient present herself before the teeth have been extracted, he may take a piece of Ash's metal about three-fourths inch wide and  $2\frac{1}{2}$  inches long and form it to the buccal of the upper arch. Either modeling compound or wax is heated and formed on the metal arch. Then, with the patient's mouth in a closed-bite position, the operator presses firmly over the labial surfaces of the upper and lower teeth, and the compound or wax is allowed to cool. This will give a model showing the form of arch, natural arrangement of the patient's upper and lower teeth, amount of overbite, and shape of teeth. The model will aid greatly in setting up artificial teeth so as to give an appearance of natural teeth.

When teeth have been removed before the patient presents for artificial teeth, a cast or mask of some close relative will many times aid in restoring a natural appearance.

#### TISSUE TONE

Tissue tone is classified as high, medium, and low, and deals with muscle attachments and buccal fold. High tissue tone found in the young patient dislodges the plate easily if there is the least overextension of margins or muscle impingement. The other classes effect dislodgement less. The person in ill health or the elderly patient with more flabby muscles can endure considerably more marginal extension without danger of denture displacement.

#### TISSUE RESILIENCE

Tissue resilience deals with that portion of the tissues over the ridges supporting the denture, with which we are most concerned regarding the roofless denture.

Tissue resilience is divided into three classes: one, two, and three. Class one is that in which the bone and periosteum are covered with the normal amount of tissue to a depth of approximately 2 mm. In class two, thin tissue, covering the ridges and giving little cushion to take the stress of mastication, makes for difficulty of retention and considerable discomfort to the patient. In class three, there are soft flabby pads over the ridges usually brought about by extensive pyorrhoeal resorption, ill-fitting dentures, unequal pressure, or stress under mastication causing extensive resorption of alveolar structure, such as that caused by the loss of lower molars and the patient doing all his masticating on the anterior teeth. An unbalanced occlusion will also cause such a condition.

In these cases it is usually necessary to remove this excess pad surgically or else compress it in taking an impression in order to give stability to the denture. All these conditions should be charted on a diagram similar to that shown in Fig. 2, dividing the upper and lower into thirteen sections and showing thereon those tissues designated as yielding or unyielding, deep or shallow, with the approximate depth, and those of the normal resilience and thickness, or those that are flabby and those that are thin and cover bony prominence.

I have found a large ovoid burrisher useful in examining and charting the approximate depth of the tissues over the various sectors. Considerable pressure can be used without injuring the tissues.

It is also well to chart the border attachments according to medium, high, or low in sectors from one to six, both as to muscular attachments and areolar tissues.

The thickness of the tissues overlying the palatal portion of the maxilla will vary considerably in individual cases, but it will be found that the average case will present the same general characteristics throughout. Fig. 3 shows a cross section through the maxilla in about the first molar region and gives the variation in this region which extends from the first bicuspid back, the tissue in the palatal fold thickening toward the posterior.

#### IMPRESSION

In making an impression it is necessary to take the tissues in their normal state without undue compression

in any region and with the muscles in a position of rest; in other words, a closed bite impression technique without compression of tissues. This method is preferred to those methods in which compression of tissues is used because one is able to go back to the examination record and prepare the model so as to get definite relief and pressure where needed rather than from a distorted model with tissues overcompressed in some regions and undercompressed in others, as usually happens when an attempt is made to take an impression by the compression method.

**Technique**—1. A tray considerably larger than the mouth is selected so that there will be a bulk of compound at least one-fourth inch thick over the buccal and labial sides and long enough to get well over the tuberosi-

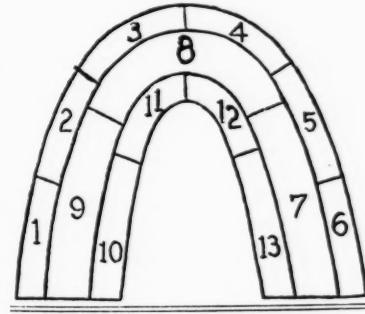
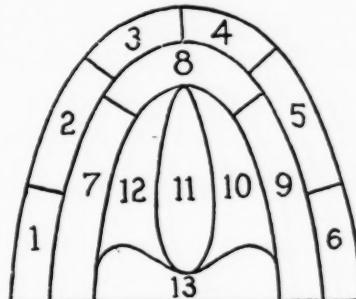


Fig. 2—Charts of regional zone units.

#### MUCOSA

##### Physical Condition

- Y. Yielding
- U. Unyielding
- D. Deep
- S. Shallow
- F. Flabby
- B. Covering Bony Prominence

##### BORDER ATTACHMENTS

	High	Medium	Low
Muscular	H	M	L
Areolar	AH	AM	AL

—From Nichols' *Prosthetic Dentistry* with permission.

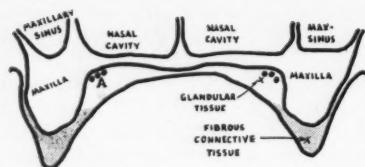


Fig. 3—Cross section through maxilla: (1) body of maxilla; (2) maxillary sinus; (3) nasal cavity; (4) fibrous connective tissue; (5) anterior palatine nerve, greater palatine artery and vein.—From Neil's *Full Denture Practice*.

It will be found from a study of the cross section and from a study of the tissues of the mouth that the tissues over the ridge and lingual side of the alveolar process are rather deep but do not yield until considerable pressure is applied; whereas back toward the soft palate this tissue will yield and can easily be compressed to a considerable depth. In the vault of the palate we find the tissue thin and yielding. The same condition is usually found over the buccal and labial surfaces.

It will be noticed that the anterior palatine nerve, palatine artery and vein occupy a place in a groove running forward from the posterior palatine foramina and that the palatal tissue is thickest at this point. Formerly it was the practice to relieve a case over the posterior palatine foramina. At present it is the practice to take all this tissue and that over the ridges under compression to prevent the full palatal denture from riding on the hard bony vault when the thicker tissues are compressed by masticatory forces.

ties and at least one-fourth inch of thickness over the palatal portion and the junction of the soft and hard palates.

2. The tray is then coated with cocoa butter to facilitate removal of the compound from the tray.

3. Soften compound in hot water and place in the tray, building it to a wedge shape in the center.

4. Flame and temper.

5. Particular attention should be given to center the tray carefully when inserting in the mouth, so that there will be an equal bulk of compound all around the periphery.

6. A good snap impression is taken, the impression chilled, and the compound removed from the tray.

7. The impression is then trimmed down below the tissue and muscle attachments buccally and labially to the thickness of one eighth of an inch over this area. Leave about 2 mm. beyond the sphenomaxillary notch on the posterior. Care should be taken that there is enough bulk over the palatal portion to prevent warping. If this appears too thin, more compound can be penciled on and tried back in the mouth. The operator should make sure that muscle attachments and tissues are not being displaced by the rim being too high.

*Centering the Tray*—It is well to have a definite method of centering the tray so that when the plaster im-

pression is taken, there is reasonable assurance that the tray will be held in the mouth exactly as desired. To obtain this (1) soften the compound over the ridge externally or on the opposite side from the impression to a depth of about 2 mm., place in the patient's mouth, and instruct him to close lightly. (2) Additional compound is then added to the ridge and the patient instructed to close until an impression of the cusps of the lower teeth is made and the relation between the upper and lower jaws is established as near normal as possible. (3) The excess is then trimmed until only the imprints of the cusps remain. The impression tray is now held in the exact position wanted and whatever pressure is exerted will be evenly distributed over the whole tray. (4) A hole is bored through the palate just distal to the rugae. It is possible to eliminate the bite plate with this method as all data necessary can be recorded on the impression.

(5) A thin mix of plaster or Truplastic or Kelly's Impression Paste is then made and enough placed in the

certained by taking a mouth mirror and passing it back over the tuberosity. It will drop back into a notch where the tissues can be compressed to a depth of nearly 4 mm. The impression is replaced in the mouth and markings are secured of the exact position of this notch on the plaster. This is marked distinctly on the impression by drawing a line through the plaster with a sharp instrument. This will make a ridge on the model definitely locating this landmark.

(9) The case is then boxed so that a flange of 2 or 3 mm. in width extends out beyond the border of the buccal and labial periphery. Separating medium is applied and the cast is made in artificial stone. When set, separate and cut two deep grooves on each side of flange at right angles to the border (Fig. 7).

#### OUTLINE OF RETENTION FORM

1. With the aid of the chart (Fig. 2) made at the chair the case is outlined for the periphery of the finished case for the retention form. This varies in every case according to tissue

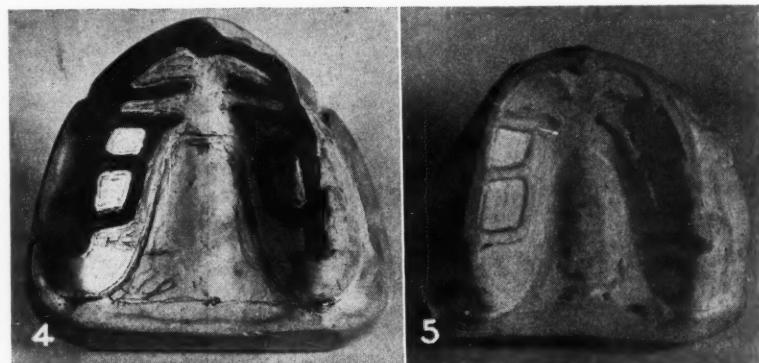


Fig. 4—Retention form in wax over penciled outline.

Fig. 5—Retention form reproduced in stone ready for vulcanizing. Note that all angles are rounded, walls parallel, and no part of retention form crosses rugae. Retention forms are varied according to each individual case as presented rather than one standardized form for all cases.

tray to cover it evenly. (6) The tray is placed in the mouth and the patient instructed to close lightly, with little pressure. While the plaster is still workable the patient should work the lips from the position of a smile to that of a whistle or pucker a few times so as to mold the plaster about the buccal and labial surfaces or give a muscle trim in a closed bite position. (7) Remove when set, and, if plaster covers the whole surface evenly, one can be reasonably assured that there has been little or no displacement of tissue. If compound shows through, either retake or relieve.

(8) With an indelible pencil, mark the sphenomaxillary notch just distal to the tuberosities. This can be as-



Fig. 6—Ordinary bite rim set up on resinous base plate for bite and registration.

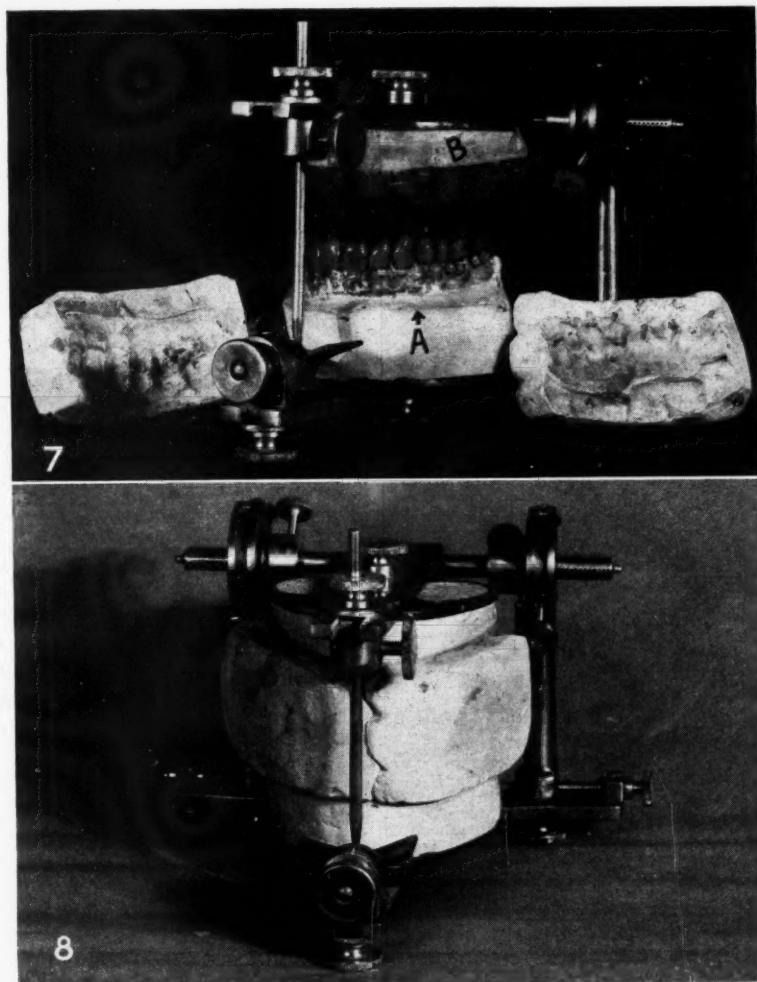


Fig. 7—Core removed from models with platform (a) built out on buccal and labial of lower model so as to support core; and (b) notches cut in upper cast to act as guibe.

Fig. 8—Core in place on articulator supporting buccal surfaces of teeth.

conditions. The periphery is first worked out, bringing the border of the finished denture about to the position of the thickest tissue covering the palate (Fig. 1), which will usually be found where the tissues fold from the palatal portion of the alveolus to the vault.

2. Extend around and through the sphenomaxillary notch and extend buccally and labially 1 mm. below the peripheral border.

3. With a number six round bur a groove is cut, beginning at the sphenomaxillary notch, the full depth of the bur at this location and gradually making it shallower as the anterior border is approached, crossing the hard palate just back of the rugae. Here the groove is less than 0.5 mm. in depth.

4. Care should be taken in the region of the sphenomaxillary notch not to bring the groove too far forward on the bony tuberosity.

5. With a curved vulcanite scraper or other suitable instrument, gradually scrape the posterior two thirds of the model from the bottom of the groove gradually fading out to a featheredge before the ridge is reached, so as to give compression of the tissues in this region.

6. A beading 0.5 mm. deep is made around the labial and buccal just below the periphery of the denture dropping down below the muscle attachments and the frenum.

7. With a sharp pencil mark off a strap 3 mm. wide just lingual to the crest of the ridge widening it out at the anterior palatine foramen to relieve pressure.

8. Approximately 4 mm. toward the ridge from the palatal periphery a parallel strap of the same width is extended forward to the first large rugae. One or two large rugae on each side are used according to the case. *At no time is it advisable to*

*cross a rugae with the retention form. This tends to produce soreness and irritation.* The rugae are utilized in building the retention form over them because the tissues in the anterior part of the mouth are thinner and less yielding than in the posterior part of the palate.

9. When the case is outlined as desired, a sheet of base-plate wax is warmed and pressed down over the model.

10. With a sharp knife this is trimmed to the outline previously marked, and the wax is sealed to the model.

11. Care should be exercised to have no sharp angles in the pattern. With an instrument, 0.5 mm. wide, a beading is made to the depth of 0.5 mm. all around the retention form, rounding all angles. When finished (Fig. 3) the wax form should be reduced to not more than a full millimeter in thickness. The walls of the form should be parallel so as not to produce an undercut as this produces irritation and does not aid retention.

12. The case is then soaked and a duplicate run. Use either Dupli-Com or Dentocoll thinned with water for an accurate duplication. The wax retention form will usually come off from the model when removed from the duplicating material. This can be softened with warm water and teased out.

13. Pour the impression in stone. When set, remove and trim any irregularities in retention form made in removing the wax. This gives a model ready for vulcanizing with the retention form reproduced in stone (Fig. 4).

#### BITE

1. With the original model, a trial bite plate (Fig. 5) is made, a stiff resinous base-plate material being used and a bite rim of wax being added. A resinous base plate is preferable to a metal one in this work as will be seen later.

2. Obtain the bite, markings, shade, mold, and face-bow registrations for mounting on an anatomic articulator.

3. In mounting the lower model a ledge 5 or 6 mm. wide is made on the buccal to provide a definite seat for the plaster matrix (Fig. 6).

4. Set up teeth in balanced occlusion.

5. Try in and make any changes necessary.

6. Wax up the buccal ready for investing but do not seal to model.

7. Oil or soap buccal surface of upper and lower models and teeth.

8. Use a rubber band to hold the articulator in closed position and flow plaster matrix over one side.

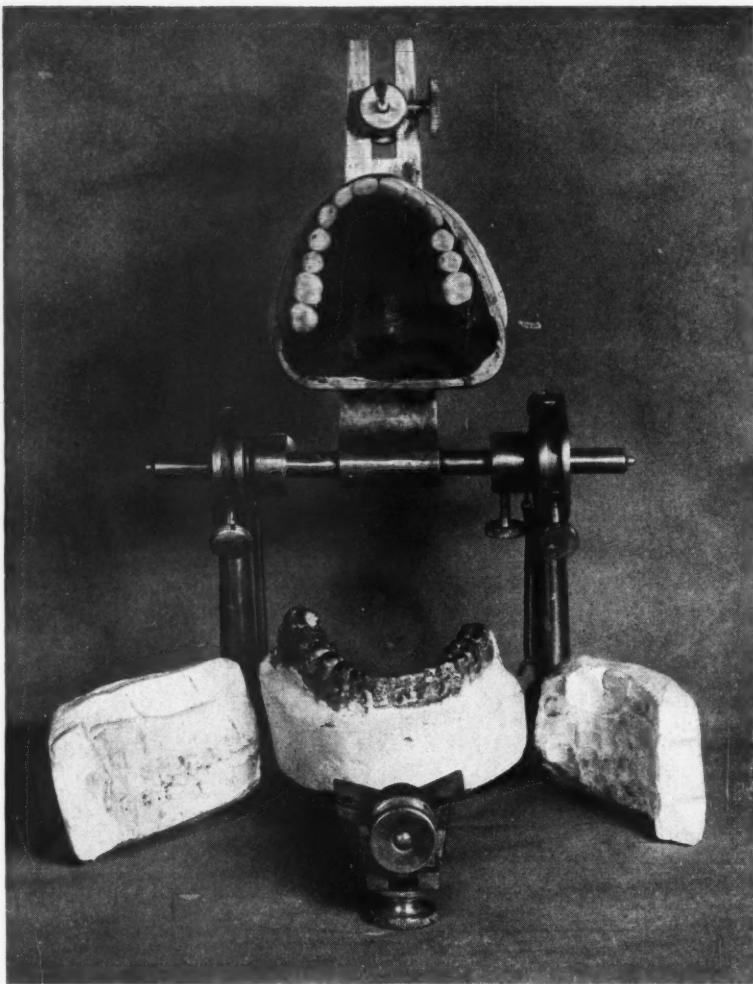


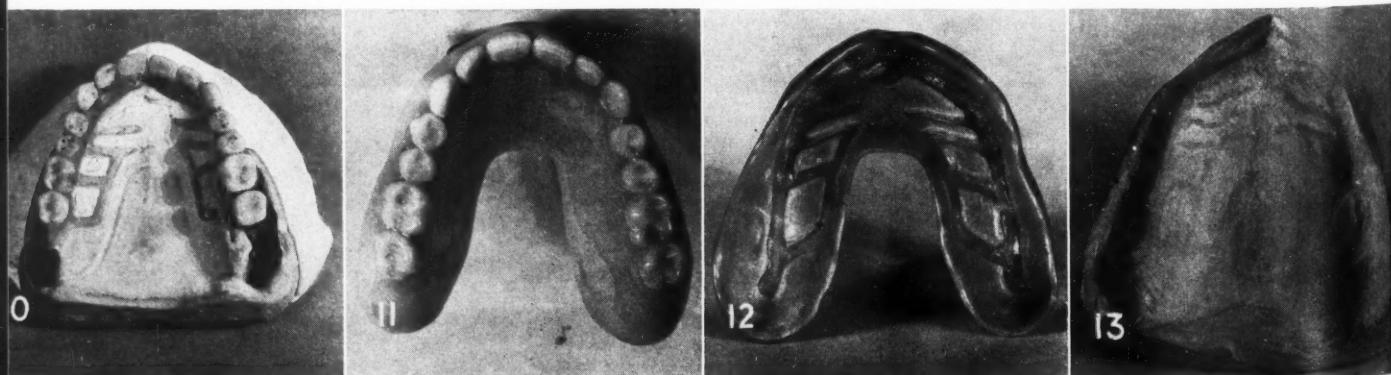
Fig. 9—Teeth set up on original impression before palatal surface is cut out and teeth are transferred to vulcanizing model. Note platform on lower to support core.

Fig. 10—Teeth transferred to vulcanizing model with retention form in stone. Palatal portion cut out but labial wax intact. Teeth are held in place with labial and buccal cores.

Fig. 11—Lingual surface of finished roofless denture showing amount removed from region of hard and soft palates.

Fig. 12—Palatal surface of roofless denture showing finished case and retention form.

Fig. 13—Condition of tissues after three years. Note absence of extensive hyperplasia.



9. Allow to harden, remove, and trim to articulate with opposite side, making a notch or two for guidance.

10. Soap and pour other half. A matrix is now had (Figs. 6 and 7) with a definite seat that will allow the transfer from the original model to the vulcanizing model without disturbing the articulation.

#### TRANSFERRING MODELS

1. Tack the matrix to the upper model with sticky wax.

2. Open the articulator and cut out the palatal portion of the trial well over the buccal and labial side of the ridge, holding the matrix securely on the model (Fig. 8). A warmed knife or hot spatula will aid in cutting the base plate.

3. Close articulator, release matrix from upper model, and tack the matrix to the lower model.

4. Unscrew upper mounting plate and remove the upper model from the trial plate leaving the teeth in occlusion in the matrix.

5. Place the upper model that has been previously prepared for vulcanizing (Fig. 4) in the matrix mounted on the lower teeth. If the retention form has not been placed too far buccally and labially, this should drop into place, the grooves cut in the model (Fig. 6) acting as a guide. However, if it does not, if the teeth have been placed too close to the ridge, enough of the retention form can be scraped away to allow the model to go to place.

Models duplicated with the materials suggested in a preceding paragraph can be made so accurately that they are interchangeable in the matrix.

6. The upper model is then mounted on the articulator, another mounting plate being used. The seal is broken between the matrix and the *lower model* and the matrix is sealed to the *upper model*.

7. Open the articulator and note  
(Continued on page 391)

## *The Editor's Page*

ANYONE who has ever seen a person die from cancer of the oral tissues must realize the fact that the dental profession, if alert, can perform a preventive rôle in the early recognition of mouth tissue malignancy. Bloodgood of Johns Hopkins University has frequently pointed out that cracks and fissures of the lips, slow healing "cold sores," irritations of the inner surface of the cheeks and tongue, swellings of the gums, and frequently, loose teeth are to be considered from both the standpoint of inflammatory processes and of neoplasms. To interpret every irritation of the oral tissues in terms of acute, subacute, or chronic inflammatory processes and to ignore the possible neoplastic basis may endanger the life of the patient.

Not long ago, a friend of mine had a "sore" lower molar with some swelling. There was a history of soreness and swelling which persisted for several weeks; then the tooth was extracted. Following the extraction, tenderness in the jaw persisted and the swelling continued. The attending dentist interpreted the condition as being a local chronic inflammatory postoperative disturbance and the attending physician considered the delayed healing as a diabetic complication. With the extension of the process into the cervical lymph glands, loss of weight, and pallor, a diagnosis of cancer was made which was confirmed by biopsy. The patient died.

As has been pointed out repeatedly by investigators the most potent weapon available in the attack against cancer is recognition of the condition in its initial phases. MacCarty<sup>1</sup> makes this observation again: "Only cancer in its late stages is being taught. . . . no teacher of pathology can teach the early stages of cancer by selecting for teaching purposes clinically recognizable cases of cancer and the dead. This can be done no more than the circumstances that lead to war can be taught on the battle field." Contrary to the dictums of pseudo-scientific newspaper columnists, publicity agents, nostrum vendors, and enthusiastic investigators, the present status of human cancer according to MacCarty indicates that "a specific cause of human cancer has not been discovered; no means of producing immunity has been established; there is no means of

making the diagnosis early other than with a microscope; there is no specific method of treatment and no immediate practical means of preventing the disease through knowledge of genetics."

Cancers are tumors composed essentially of epithelium which are supported by a vascular stroma from the contiguous tissue. The epithelial cells of cancer are possessed of the vigor of rapid growth, a wild vitality that breaks through every barrier and a fertility that enables them to grow in the new soil of distant organs to which they are transported by the blood and lymph streams. In the oral tissues, cancers of both the squamous-cell and basal-cell types are encountered. Squamous-cell carcinomas are a greater menace to life than the basal-cell type. The invasive tendency of the squamous-cell type to involve the regional lymph nodes, to metastasize to distant parts of the body, is explained in terms of its histologic structure.

According to MacCallum<sup>2</sup>, there is no definite line of demarcation between the tumor cells and the normal adjacent tissue in this type of cancer (squamous-cell):

"It is constantly to be observed that the cells grow out irregularly at any point in the course of the strand, and push their way into that tissue in a way totally foreign to the normal epidermis. This process, which, as we have said, is most striking along the advancing margin of the tumor where it encroaches upon the underlying tissue, is the visible sign of the malignancy of growth which gives the tumor its peculiar character."

Of the basal-cell type of cancer MacCallum<sup>3</sup> says:

"On section through such tumors one is impressed with the fact that, in spite of the complexity of the downward-growing strands, all reach to about the same level. Further, it is seen that they are very sharply outlined against the stroma, and show little inclination to strew their cells into the irregular crevices of that tissue. Doubtless this morphological character is an expression of their benign type of growth." The histologic structure, therefore, determines in part the

(Continued on page 389)

<sup>1</sup> MacCarty, W. C.: The Cancer Problem Today. J. A. M. A. 103:959 (September 29) 1934.

<sup>2</sup> MacCallum, W. G.: A Textbook of Pathology, Fifth Edition, Philadelphia, W. B. Saunders Company, 1932, page 1070.

<sup>3</sup> Footnote 2, page 1080.

## DIFFERENTIAL DIAGNOSIS

HERMAN MEYERS, D.D.S.

Pittsburgh

THE two cases reported here, both referred to me for the removal of abscessed teeth, demonstrate the importance of a thorough study of many cases that present themselves. On casual observation, these cases do not appear unusual, but after careful study, including thorough roentgenographic examination, they were found to be serious in nature.

### REPORT OF CASES

CASE 1—S. A., a youth, aged 15, was referred for the removal of an abscessed tooth.

*History*—Four weeks previous the patient noticed that his face was swollen. There was no pain or discomfort. The patient had no recollection of any injury.

*Ocular Examination*—Extra-oral: The right side of the face was somewhat swollen. The right ala of the nose appeared elevated, so that the right nostril seemed larger than the left.

*Intra-oral*: The deciduous cuspid was in situ. A marked swelling on the facial aspect of the maxilla from lateral to first molar extending high up beyond the superior border of the vestibule was noted. The lingual aspect revealed the right side of the palate to be well rounded, with the height of the convexity about 1 cm. lower than the normal left side of the palate.

*Digital Examination*—A large, well rounded, hard swelling was palpated under the soft tissues of the cheek. Pressure extra-orally produced no pain nor fluctuation.

*Intra-oral* pressure on both facial and lingual surfaces revealed a large, well rounded swelling of bone-like consistency. There was no pain nor fluctuation, but a slight crepitation was noted when pressure was exerted on the facial surface.

There was a perceptible movement of the lateral incisor, deciduous cuspid, and first bicuspid.

*Roentgenographic Examination*—Fig. 1 shows a deciduous cuspid in normal position. Distal inclination of the first bicuspid is noted. No evidence of a permanent cuspid is present. The unusual structure of the bone is especially noted.

The position of the permanent cuspid is revealed in Fig. 2. Mesial inclination of the lateral incisor and similar bone formation as in Fig. 1 is again noted.

Fig. 3 shows the position of the unerupted cuspid which was found to be on the left of the median line. The highly cancellated appearance of the bone on the right side is also noted in the occlusal view. A definite extension of the bone buccal to the teeth is clearly revealed.

*Differential Diagnosis*—1. Osteomyelitis: Despite the fact that there is considerable destruction of bone with what appears to be some sequestration, the



Fig. 1—Deciduous cuspid in normal position; distal inclination of first bicuspid. Note unusual bone structure.



Fig. 2—Position of permanent cuspid; mesial inclination of lateral incisor. Note unusual bone structure.



Fig. 3—Unerupted cuspid on left of median line. Note cancellated appearance of bone and extension of bone buccal to teeth.



Fig. 4—Appearance of mass in inches.

total absence of all symptoms of either an acute or chronic infection, except the swelling, would tend to rule out osteomyelitis. While the supporting structures around the teeth may be extensively involved or destroyed in osteomyelitis, there is rarely any noticeable change in the position of the teeth; hence the malposition of the lateral, cuspid, and bicuspids would indicate the presence of another condition.

2. Cysts: The general clinical picture is that of a typical cyst. The roentgenographic examination would indicate a possible multilocular cyst. The malposition of the teeth could be accounted for as the result of the pressure produced by the enlarging cyst. The fact that the unerupted cuspid does not appear to be directly involved is unusual.

3. Neoplasm: From the roentgenographic observations and the clinical appearance, a neoplasm was considered as a possibility although the age of the patient, 15, did not tend to confirm this diagnosis.

**Operative Procedure**—A semilunar incision, with convexity toward the gingival, extending from the apical region of the right central to the apical region of the second bicuspids, was made and the mucoperiosteum was elevated. Attached to the flap was a thin piece of bone about 1 cm. in diameter. On the inner surface of this plate of bone were several thin partitions. The opening in the maxilla was greatly enlarged, bringing to view a tough, gray, convoluted mass. By carefully dissecting the mass from the bony wall, it was easily delivered. The cavity in the maxilla was about the size of a walnut while the inner surface of the bony crypt resembled the inside of a walnut shell with the thin plate-like projection on it.

After removal of the neoplasm a thorough examination did not show any evidence of the unerupted cuspid. However, the removal of a thin plate of bone in the medial superior region of the cavity exposed the tooth which was readily removed. Inspection of the tooth showed Nasmyth's membrane intact around the crown of the tooth, proving conclusively that there was no relationship between this tooth and the neoplasm.

Further examination revealed that the roots of the lateral and first bicuspids were almost entirely exposed. Owing to the general condition of these teeth, they, together with the central incisor, which was a pulless tooth, and the deciduous cuspid were extracted. Considerable caution was used in this operation, with the result that the buccal plate of bone remained intact, thus preventing a marked deformity in this region.

The mucoperiosteal flap was then sutured in place. Recovery was uneventful.

Subsequent examination of the neoplasm revealed thin septa of bone between the convolutions.

**Pathologist's Report**—Macroscopic examination: The specimen submitted is that of two irregular, lobulated, cauliflower masses, the larger of which measures 4 by 3 by 2 cm. The surface is covered by a deeply injected mucous membrane



Fig. 5



Figs. 5 and 6—Extensive area of rarefaction with what appears to be septum of bone dividing area into two sections.

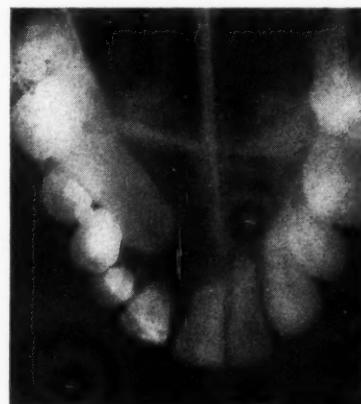


Fig. 7—Occlusal view showing lateral extension of pathologic area and position of unerupted cuspid.

and the consistence of the mass is firm, cutting with resistance and showing a pearly translucent fibrous cut surface.

**Microscopic examinations:** Sections show that the mass is composed of whorls of fibrous tissue that is acellular and relatively avascular and shows scattered areas of lime salt infiltration and in places hyalin degeneration. There are no giant cells. The neoplasm is distinctly benign.

**Diagnosis**—A diagnosis of fibroma durum was made.

Fig. 4 is a photograph of the neoplasm showing the size in inches.

**CASE 2—S. S., a man, aged 35, was referred for extraction of an abscessed upper right lateral incisor.**

**History**—Two weeks previous the patient had had a swollen face with considerable pain. The pain persisted for two days when the abscess opened with a copious discharge of pus; then the pain subsided within a few minutes. The swelling disappeared in about five days. The patient visited a dentist who advised removal of the right lateral incisor.

**Ocular Examination**—The face appeared to be normal. Intra-orally, a fistulous opening was present on the labial surface above the apex of the lateral incisor. A slight swelling of the right side of the palate was visible. Absence of the cuspid was noted.

**Digital Examination**—Extra-oral examination was normal, but intra-oral palpation of the labial and buccal surfaces revealed a well rounded surface, although not marked. There was considerable crepitation produced on pressure. On the lingual surface there was considerable fluctuation, and pressure caused a discharge of pus through a fistulous opening on the labial surface. The right central, lateral, and first bicuspids were loose.

**Roentgenographic Examination**—Figs. 5 and 6 reveal an extensive area of rarefaction with what appears to be a septum of bone dividing the area into two sections. Parts of the unerupted cuspid are also seen.

Fig. 7 is an occlusal view showing lateral extension of pathologic area and position of unerupted cuspid.

**Diagnosis**—A diagnosis of infected dentigerous cyst was made. This cyst probably had its origin in the membrane around the crown of an unerupted cuspid with the infection being introduced at a later time through the pulpless lateral incisor.

**Operative Procedure**—An incision similar to that in Case 1 was made and the flap elevated. Around the fistulous opening, the cyst membrane was found to be attached directly to the mucoperiosteal flap, and separation with a scalpel was necessary. The thin facial plate of bone was removed and free access to the cyst was gained. With rather flat-bladed curets, the cyst membrane was carefully dissected from the bone and teeth and removed in toto. During this process there was a continuous discharge through the labial opening of a mixture of pus and fluid containing masses of a pearly, glistening substance; no doubt, cholestrin crystals.

Following the removal of the sac, the cuspid, half of which extended into the cyst cavity, and the right central, lateral, and first bicuspids were removed. The roots of these teeth showed considerable absorption. The left central and right lateral bicuspids were not involved, the cyst cavity being lingual to these teeth.

On the lingual surface of the cystic crypt, a prominent vertical ridge of bone was present. Distal to this structure, there was a well rounded depression in the bone, while anterior to it, the entire palatal bone was absorbed, revealing an area of about 2 cm. in diameter of palatal mucous membrane.

Recovery was uneventful.

## EXTENSIVE PORCELAIN RESTORATIONS: BITE REVISION

(Continued from October issue)

HARRY KAZIS, D.M.D.

Cambridge, Massachusetts

**B**Y EXTENSIVE porcelain restorations, the dentist is enabled to make such complete and drastic transformations in the mouth that the discussion on bite revision in the preceding article is here continued with a presentation of a few more cases which point out additional possibilities.

The previous article discussed the application of the extensive porcelain restoration method to the transforming into a normal bite of a bite malformation in which the lower teeth protrude over the upper teeth. In this article, one case will be presented as an illustration of the application of that method to a bite protruding to one side; another case will illustrate the closing in of an open bite and its transformation into a normal one by this porcelain jacket method; and the third case presented will illustrate its application to the correction of teeth that were irregularly arranged into a row of uniform and regularly aligned teeth.

### RÔLE OF THE PATIENT

First of all, one must realize that work of this nature is strenuous for the patient. An examination of the patient's physical condition, and a thorough review of his case history is therefore necessary before considering him for this work at all; only when the patient's physical condition permits and then only, is it advisable to undertake this type of work.

The attitudes of the patient also deserve consideration before work of this nature is undertaken. From my experience with extensive porcelain work on many patients, I find that their attitudes vary, and may be conveniently classified into three types:

There is first the type of quick temperament—the person who is high-strung, nervous, and usually irritable, perhaps unruly. This type makes it unpleasant and difficult for the operator to accomplish his desired results. Work of this nature should not be undertaken on patients of this type if it can possibly be avoided.

Then we have the second type of patient who is somewhat better than the first, but is also sensitive and, at times, irritable. This type can be con-

trolled by a bit of psychology on the operator's part. A sedative given before the work is begun, or at intervals during the process of the work; a local anesthetic to allay the pain as much as possible; and operating only for brief periods of time—not more than an hour at a sitting—such things tend to quiet this type of patient, and make good work possible.

Much less frequent, but welcome to the operator, is the third, the cooperative type. This type seldom complains, and cooperates willingly with the operator, and often offers suggestions which are at times of help. When this type of patient is encountered, the work is agreeable, interesting, and good results are assured.

### BITE PROTRUDING TO ONE SIDE

*Bite protruding to one side* is a simple name for a complicated dental malformation. In Fig. 1, showing models of the teeth before the work was begun, it is seen that the upper right lateral, right central, left central, and left cupid are partly hidden by the lower anteriors. Also, the upper bicuspids and molars articulate into the sulci of the lowers, forming a cross-bite. This describes the nature of the malformation.

The preliminary steps of taking roentgenograms and making study models were the same in this case and those that follow as for the case described in the preceding article in full detail.

The actual work of correction was begun by raising the bite. This step was begun on the two sides of the lower jaw at once by preparing both the lower right and lower left molars for gold crowns. Platinized gold was used for these crowns, because of its improved appearance and second because of its greater durability and strength.

On the left side the lower first molar was missing, which left a narrow space because it was extracted at an early age. I found this space useful in raising the bite, because it afforded the possibility of raising the bite by making a bridge. This bridge, consisting of the molar and a Tru-pontic, resulted in an esthetic piece of work. On the right side, the lower

first molar was missing, and there was not room enough to supply a pontic; therefore a crown was fitted onto the second molar, carved so that it extended to the adjacent second bicuspid to make a good contact. At the same time it was articulated to the upper first and second molars. With this completed, the groundwork for raising the bite was laid.

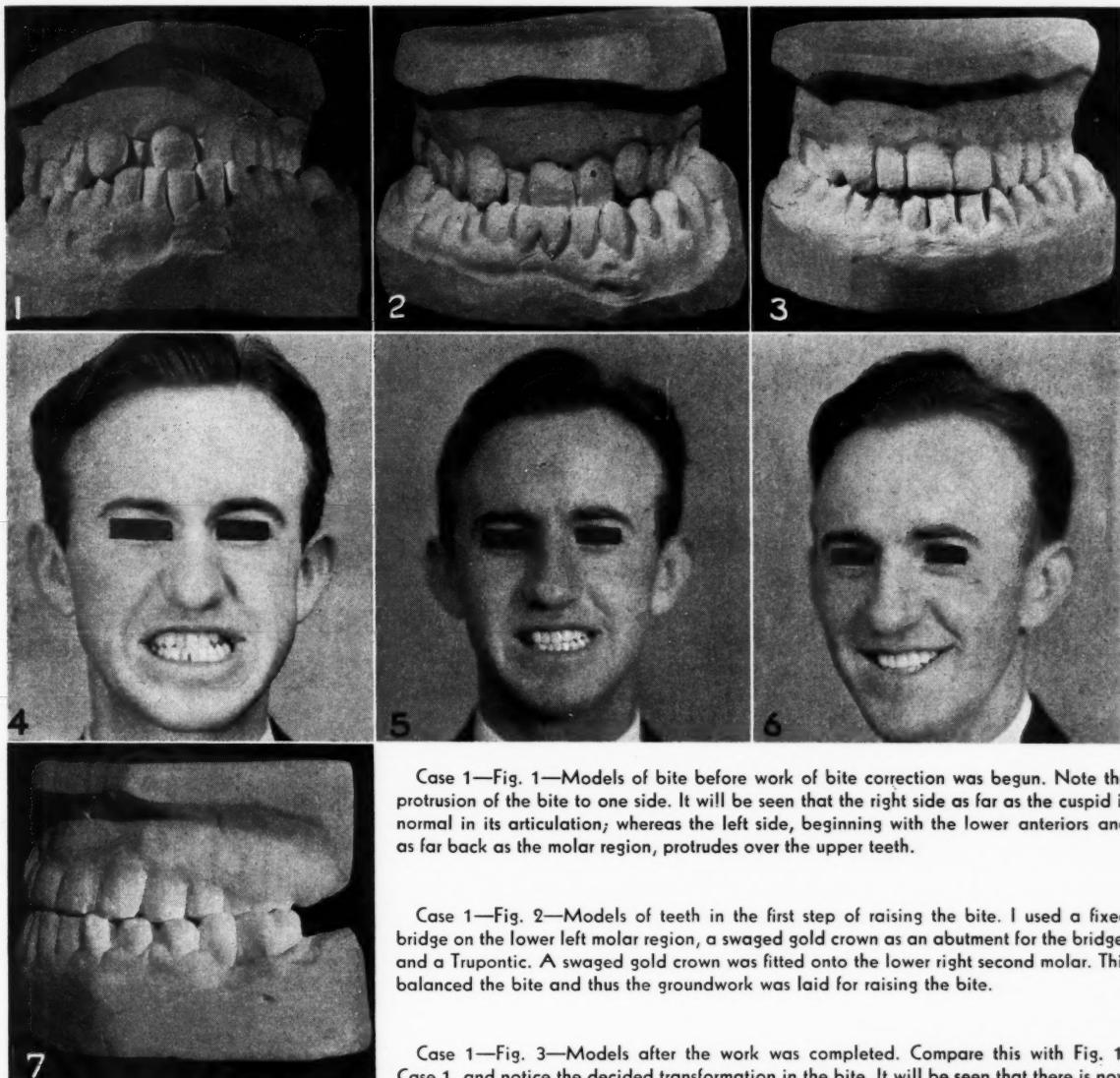
If the first models, before the raising of the bite was begun (Fig. 1), are contrasted with the models (Fig. 2) after the raising of the bite, the decided transformations which resulted will be observed. It will be noticed that by this step alone, the upper anterior teeth, which before were hidden by the lower teeth, now began to be more visible, and more clearance was afforded the operator in which to carry out his desired work.

My best conjecture as to the possible cause of the malformation of the whole bite is that the deciduous teeth were retained too long with the result that the permanent teeth were not given a chance to erupt in proper time-sequence. Another probable cause is mouth breathing. A likely cause, also, is an early loss of the first permanent molars.

After the bite was raised it was only necessary to prepare the teeth for porcelain jackets. The work was begun with the upper right cupid; then the upper right lateral, right central, left central, left cupid, and left first bicuspid, in the order named. It was found necessary later on, in order to close the bite, to jacket also the lower right first bicuspid, and to make that tooth articulate with the upper right bicuspid. Fig. 2 shows how far the bite was cleared in the first step of the raising of the bite. Fig. 3 shows the completed work with the upper teeth brought over the lowers in proper articulation and alinement.

### CLOSING IN OF AN OPEN BITE

An interesting transformation, the closing in of an open bite, is shown in the illustration of Case 2 (Figs. 1, 2, 3, and 4). The models in Fig. 1 bring out clearly how great the separation was between the upper laterals and centrals and the corresponding lowers. The separation in this open



Case 1—Fig. 1—Models of bite before work of bite correction was begun. Note the protrusion of the bite to one side. It will be seen that the right side as far as the cupid is normal in its articulation; whereas the left side, beginning with the lower anteriors and as far back as the molar region, protrudes over the upper teeth.

Case 1—Fig. 2—Models of teeth in the first step of raising the bite. I used a fixed bridge on the lower left molar region, a swaged gold crown as an abutment for the bridge, and a Trupontic. A swaged gold crown was fitted onto the lower right second molar. This balanced the bite and thus the groundwork was laid for raising the bite.

Case 1—Fig. 3—Models after the work was completed. Compare this with Fig. 1, Case 1, and notice the decided transformation in the bite. It will be seen that there is now a normal relationship between the upper and lower teeth. The lower teeth no longer protrude over the uppers; instead the upper centrals and laterals have been brought over the lower centrals and laterals. Note also the articulation of the bicuspid and molars.

Case 1—Fig. 4—Condition of the teeth after the bite was raised, but before the revision of the bite was begun. Compare this photograph with Fig. 1 and notice the change in the bite. By the raising of the bite the upper anterior teeth which before were hidden by the lower teeth can now be fully seen. This gave the operator ample clearance in which to carry out the work.

Case 1—Fig. 5—After bite revision was completed. Compare this with Fig. 4 and notice the decided change in the bite as well as in the facial appearance of the patient.

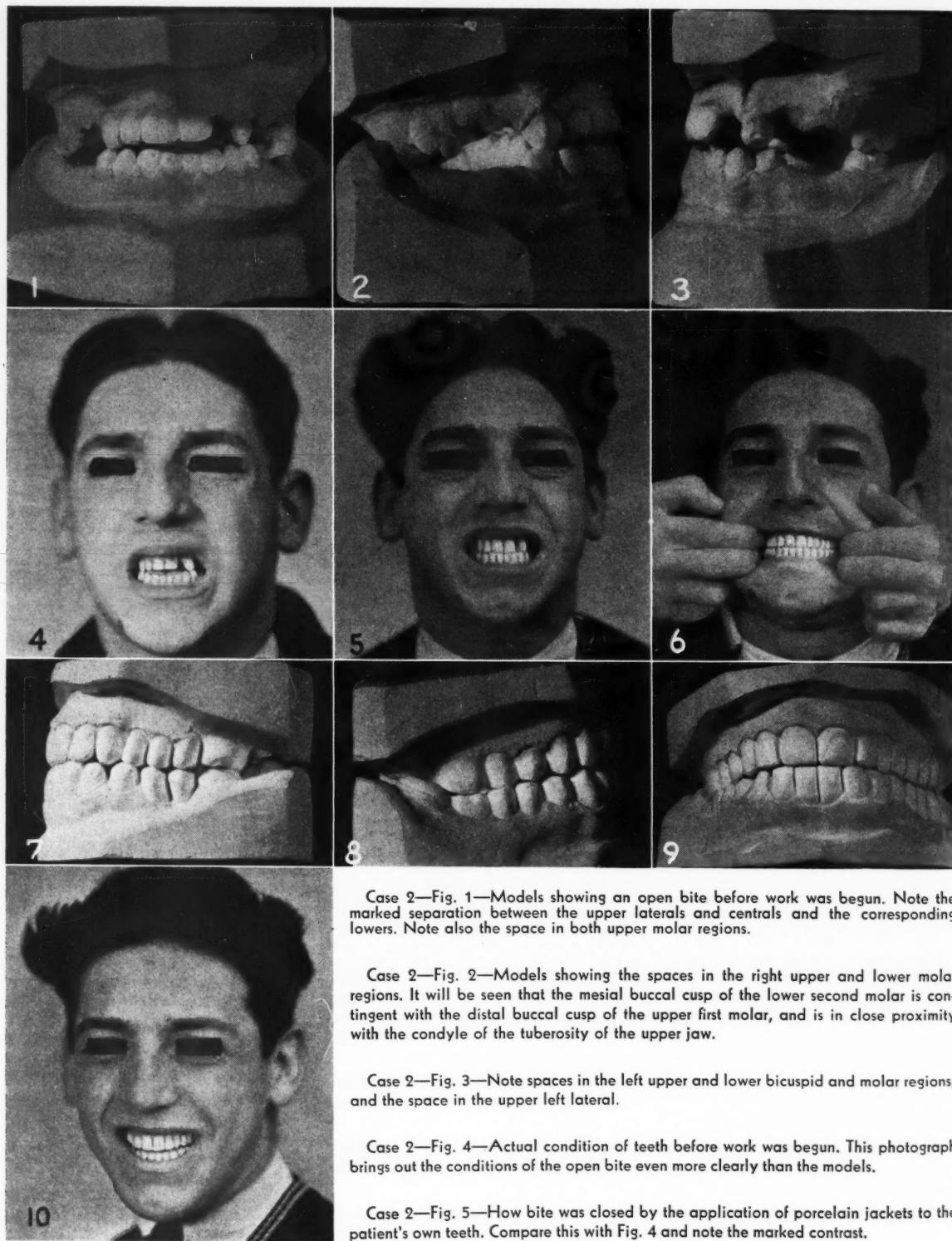
Case 1—Fig. 6—After work was completed. In this photograph the upper set of teeth is brought out more clearly; whereas in Fig. 5 both upper and lower teeth can be seen in their alinement and articulation after completion of work.

Case 1—Fig. 7—Left lateral view showing the condition of the teeth after the bite was raised and the work completed. The raising of the bite was accomplished by applying a swaged crown on the second molar and a Trupontic to fill in the space. Note the closing of the bite, the good articulation, and the symmetrical alinement of the teeth.

bite is even more strikingly brought out by Fig. 4, showing the appearance of the patient's mouth before the work of transformation was begun.

Fig. 3 presents a left lateral view of both upper and lower jaws, showing wide spaces as a result of missing teeth. These teeth were extracted when the work was begun because, being badly infected, broken, or otherwise seriously defective, they had to be removed. On the right lateral side (Fig. 2), are also seen wide spaces caused by necessary extractions. Fortunately for the patient, both an upper and a lower molar were left, which made it possible to fit fixed bridges in order to fill these spaces.

The work was begun in this case by first restoring all the teeth having cavities. Then the anterior teeth, both



Case 2—Fig. 1—Models showing an open bite before work was begun. Note the marked separation between the upper laterals and centrals and the corresponding lowers. Note also the space in both upper molar regions.

Case 2—Fig. 2—Models showing the spaces in the right upper and lower molar regions. It will be seen that the mesial buccal cusp of the lower second molar is contingent with the distal buccal cusp of the upper first molar, and is in close proximity with the condyle of the tuberosity of the upper jaw.

Case 2—Fig. 3—Note spaces in the left upper and lower bicuspid and molar regions, and the space in the upper left lateral.

Case 2—Fig. 4—Actual condition of teeth before work was begun. This photograph brings out the conditions of the open bite even more clearly than the models.

Case 2—Fig. 5—How bite was closed by the application of porcelain jackets to the patient's own teeth. Compare this with Fig. 4 and note the marked contrast.

Case 2—Fig. 6—Closing of the bite by porcelain crowns, the filling in of the spaces by fixed bridges, and the fine appearance of the occlusion in normal articulation. Compare this with Fig. 1 and note the decided contrast.

Case 2—Fig. 7—Left lateral view of models after work was completed by the application of fixed bridges. This work was accomplished by using a swaged gold crown for the upper second molar with a three-quarter crown for the cuspid as abutments, and three Steele's posteriors as pontics for the bicuspid and molar regions, and a Steele pontic for the lateral. The same method was used for the lower teeth: a swaged gold crown for the second molar and a three-quarter on the first bicuspid as abutments, and two Steele's posteriors as pontics.

**Case 2**—Fig. 8—Right lateral view of models showing the filling in of spaces by fixed bridges: a three-quarter crown was used on the upper cuspid and a swaged gold crown on the upper molar as abutments, and two Steele's posteriors were used as pontics. The same method was used for the lower teeth: a three-quarter crown on the first bicuspid, as an abutment, two Steele's posteriors and a pin-facing with cusp as pontics; also swaged gold crown on the second molar as an abutment.

**Case 2**—Fig. 9—Completed work. Note the decided improvement of the bite by comparing this with Fig. 1, Case 2.

**Case 2**—Fig. 10—After work was completed. Compare this with Fig. 4 and note the decided improvement in the teeth and facial appearance.

upper and lower, were prepared for porcelain jackets. The upper right lateral, right central, and left central were jacketed first. Then jackets were applied to the lower centrals and laterals. The order of restoration was a point of decided importance in the technique, because by proceeding in this way, I was able, in closing the bite, to judge the proper amount of extension for the uppers, then the lowers, to make them meet centrically and in a regular line. After the anterior bite was thus closed, there remained only to fill in the spaces with fixed bridgework (Figs. 7 and 8).

#### REGULATING TEETH

Case 3 shows what can be done in the way of bite revision when the correction needed is entirely a matter of regulating the teeth. In this case the upper teeth were in particular need of regulating. As Fig. 1 (Case 3) shows, the upper anterior teeth were irregular from cuspid to cuspid. The amount of regulating,

678 Massachusetts Avenue.

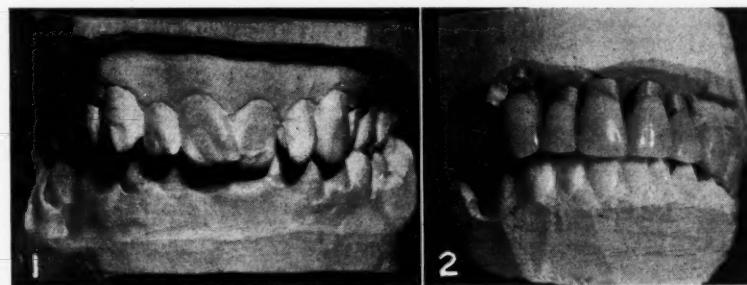
and how it was brought about, can be seen in Fig. 2 (Case 3), which shows the porcelain jackets on their respective dies. Also note here the normal alinement, the regularity, and uniformity of the upper teeth.

#### CONCLUSION

It is possible, in the extensive porcelain restorations, to obtain good naturalness. But I feel that naturalness is being overdone somewhat by the profession. By this I mean that the restored teeth should be made to look natural, and even better than the

ing and exaggerating the natural defects of the original condition.

Some shading to conform to the natural remaining teeth is needed. A certain degree of irregular positioning is also advisable to harmonize with the natural teeth. But I do wish to stress that it is not necessary to darken the artificial teeth with added stain, or with excessively dark "original" shading, to make artificial teeth conform to the style of what the patient's own teeth were like. Instead, I believe that it is better to take out marks on the complete restoration, to



Case 3—Fig. 1—Before work was begun. Note irregular anterior teeth from cuspid to cuspid.

Case 3—Fig. 2—Models showing porcelain jackets on their respective dies. Note degree of correction obtained. Compare with Fig. 1, Case 3, and note the decided change in the position of the teeth in their improved alinement.

patient's own teeth; however, dentists today are going too far when they reproduce tobacco stains and grinding markings on artificial teeth. It smacks too much of the primitive man's liking for ornamenting his teeth by exaggerations, such as grinding and painting. If a patient comes in to have his teeth improved he should be made to look improved; that is, healthier, instead of imitat-

give the teeth added durability as well as attractiveness.

Only a few of the possibilities that the ceramic field offers have been pointed out in the hope that this work will interest others and lead them to further research along these lines. The field of dental ceramics has many more potentialities yet untried which can be realized.

(End of Third Installment)

#### THE EDITOR'S PAGE

(Continued from page 383)

degree of malignancy. The more closely the tumor structure approaches the morphology of normal epithelial tissue the less malignant the growth.

In an otherwise inclusive presentation of the cancer problem today, MacCarty<sup>1</sup> apparently has failed to consider the valuable assistance that the members of the dental profession can give in the early detection of cancer. MacCarty emphasizes the importance of education of active members of the medical profession, medical students, and "all those who are or might be affected by this disease." MacCarty's apparent oversight with regard to the importance of the dental profession in this battle against

cancer is again demonstrated in this sentence: "So far as seeing early cancers is concerned, dermatologists, endoscopists, roentgenologists, surgeons, and surgical pathologists are the only physicians who have this opportunity."

Bloodgood, Cutler, Ewing, and others have recognized the position of the dental profession as an organization in cancer defense. It is regrettable that the Chairman of the Section of Pathology and Physiology of the American Medical Association and a member of the Staff of the Mayo Clinic (MacCarty) does not have the all-inclusive perspective of possible agencies of preventive medicine to recognize and stress a foremost source of preventive action which is inherent and available in the cooperative profession of dentistry.

## ABOUT OUR CONTRIBUTORS

LEON HARRIS received his M.D. in 1908 from Cornell University Medical College and his D.D.S. from New York University College of Dentistry. Doctor Harris is a member of the Eastern Dental and First District Dental Societies and the Eastern Medical Society, and is Chief of the oral surgery department of Trinity Hospital, Israel Zion Hospital, and the New York Infirmary for Women and Children.

W. S. BENEDICT received his D.D.S. in 1914 from the Georgetown University School of Dentistry. Doctor Benedict has previously contributed to the dental literature. From 1910 to 1928 Doctor Benedict was professor of oral surgery at Georgetown University, and was formerly chief of the Dental Clinic, Episcopal Eye, Ear, Nose and Throat Hospital, and is now engaged in general practice. Doctor Benedict is a member of the A.D.A., District of Columbia Dental Society, and the National Capital Clinic Club.

HERMAN MEYERS received his D.D.S. in 1917 from the University of Pittsburgh School of Dentistry. Doctor Meyers has previously contributed to the dental literature. He is a member of the Odontological Society, the A.D.A., Pennsylvania State Dental Society, Omicron Kappa Upsilon and Alpha Omega. Doctor Meyers' practice is limited to exodontia.

The biographies of John H. Nesson, D.M.D. and Harry Kazis, D.M.D. appeared in the September issue of *THE DENTAL DIGEST*.

## WHAT THE DENTIST SHOULD KNOW ABOUT THE LAW

(Continued from page 377)

summoned you must appear in court. Should you find yourself in such a predicament, it is your duty to appear and testify to the facts as you know them. But remember, that you can tell the truth in such a manner as to help your brother practitioner who is faced with defending the suit or you can do him much damage. Remember also, that every time a judgment is rendered against a dentist for malpractice, a dozen new cases are stimulated, and you may be the next one to be faced with a suit for malpractice. Never under any circumstances sit in with a plaintiff's counsel and advise him what questions to fire at the defendant.

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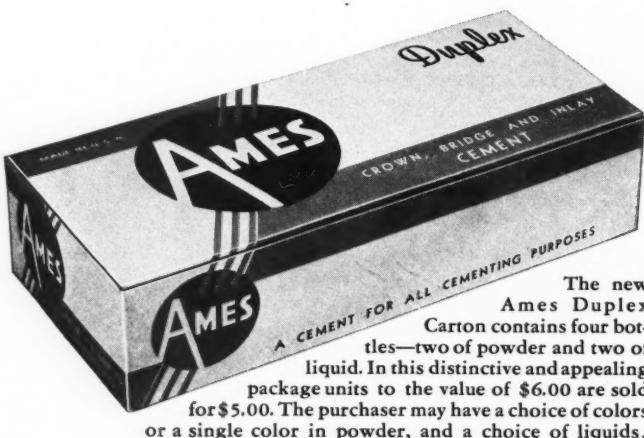
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## ROOFLESS DENTURES

(Continued from page 382)  
carefully that the teeth have not been moved or displaced from their respective positions in the matrix.

8. Seal teeth to model with sticky wax and remove matrix (Fig. 8).

9. Seal the buccal rim.

10. Check articulation.

11. The palatal portion, previously cut away, should now be replaced.

12. Fill in the depression between retention forms not quite to the tops of the ridges.

13. Warm a sheet of base-plate wax and press to place.

14. Smooth off, seal, carve wax, and flask.

It will be noted that the buccal wax has not been disturbed at any stage.

15. Best results have been obtained when the case has been made of vulcanite by using a lining of jet black rubber next to the tissues. This seems to cause less irritation and soreness than any of the other nonmercuric rubbers. Whatever soreness has been observed was caused by the beading being too deep, too sharp, or too rough.

16. Just before the flask is closed for vulcanizing, a sheet of lubricated cellophane is placed over the model. This material has a tendency to

1746 K Street.

stretch considerably before tearing and brings out the palatal portion and grooves in a smooth and dense condition requiring little or no polishing. There are a number of model coatings on the market that will give the same or better results.

17. When finishing observe and correct any sharp or rough places on the beading.

18. When the finished case is placed in the mouth, the patient should be instructed to bite down firmly for several minutes with as much pressure as can be comfortably borne. Adaptation and retention do not occur for a few hours after the denture is placed in the mouth, or not until the denture becomes seated to place. Correction of occlusion should not be made until the denture has become seated except for extremely high points. The patient should be told not to become discouraged if retention and adaptation do not occur immediately, but to keep closing under pressure. In a short time tissues will work down into and almost fill the retention grooves.

## CONCLUSION

Observation of cases over a period of three years has shown that retention is as good as when first made. There has been no irritation during

this period and tissues do not show any signs of deficiency of blood supply.

Many believe that this type of retention will cause extensive hypertrophic tissue and is injurious because of this fact. Fig. 13 shows the condition of the tissues and the amount of hypertrophy that has taken place after a roofless denture was worn continuously for more than three years. The tissues are healthy, show no signs of pathosis, and there is no more hypertrophy now than there was two weeks after insertion of the denture.

Some are of the opinion that the tissues of the mouth are ruined for making the conventional type denture. In the first place it has been my experience that a patient who has once worn both types would not want to go back to the conventional type. However, should the latter type be desired, it is possible to place the tissues back in their original state within a week's time.

I have yet to observe any ill effects from this type of roofless denture when properly designed and constructed. This does not mean that there might not be difficulty in specific cases or if the denture is carelessly constructed.

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